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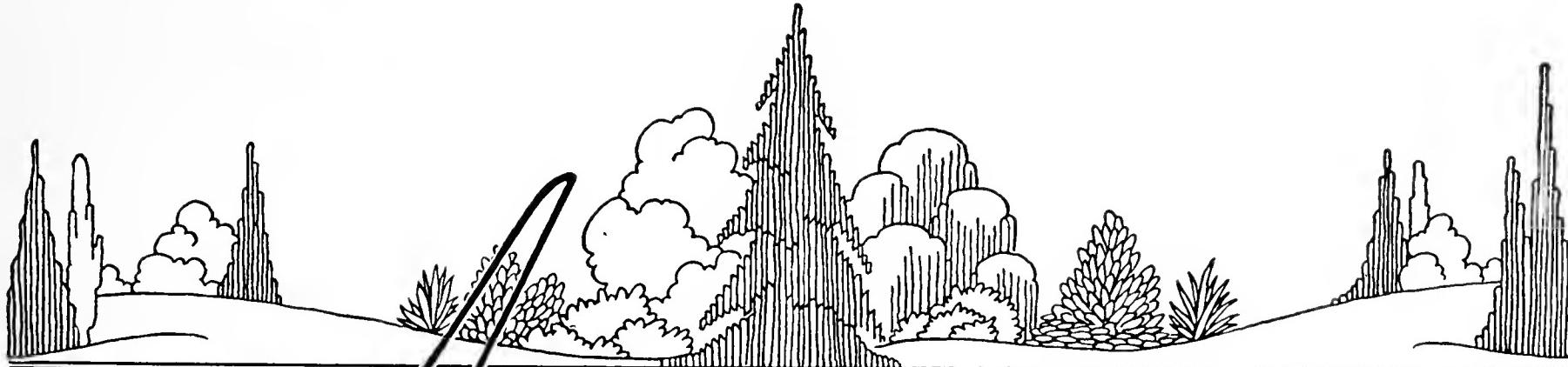
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TABLE OF CONTENTS

Through the Seasons in	
Burma's Botanical Garden	Ruth D. Svhla 37
Bigleaf Maple	C. Frank Brockman 41
Lilies for Our Gardens	W. L. Fulmer 42
Lilies in the Arboretum	B. O. Mulligan 44
Plants with Variegated or	
Colored Foliage	John B. Strander 46
Arboretum Spotlight	47
The Hardier Ceanothus	Lester Rountree 48
New Zealand Veronicas	Margaret E. Watt 51
Lady of the Lilacs	Elizabeth B. Hanley 54
Notes and Comment	56
Arboretum Notebook	58
Book Reviews	66





The Arboretum Bulletin

VOLUME XVII

SUMMER, 1954

NUMBER 2

Through the Seasons in Burma's Botanical Garden

RUTH D. SVIHLA*

SHOULD a map of Burma be superimposed upon that of the northwestern United States with its northernmost part on the Washington-Canadian border, then the southernmost point would reach into Lower California while the eastern border would extend into Montana and Wyoming. One of the charms of Burma is its diversity of both climate and terrain. Shaped somewhat like a kite, it extends north and south from 10° to 28° latitude and runs the gamut of climatic conditions. The northern tip borders Assam, Tibet and Yunnan where snowy peaks of the eastern Himalayas rise as high as 20,000 feet. In his book *Burma's Icy Mountains*, F. Kingdon-Ward has aptly pictured this rugged, virtually unexplored frontier as one of the richest floral regions of its size. In central Burma, the flat Irrawaddy River plain, shut off from the southwest monsoon rains by the western Arakan Hills, comprises the Dry Zone. Here the average annual rainfall is around 30 inches. Cactus and thorn trees grow in the wastes while on the irrigated land such crops as rice, beans and peanuts are cultivated. The Arakan Hills together with the Naga and Chin Hills to the northwest effectively seal off the country's western border. The beautiful Shan Hills make up most of the eastern part of the country. They are not very high, averag-

ing only about 4,000 feet, but some peaks rise up to 8,000 and 9,000 feet. These lush, green hills blending into lavenders and purples in the distance, roll in a general north-south direction between the parallel valleys of the Sittang, Salween and Irrawaddy Rivers. Burma also tails southward some 10 degrees latitude along the western side of the Malay peninsula, thus bringing within its borders the rank vegetation of the true tropics.

One does not ordinarily associate the Orient with such institutions as Botanical Gardens. In fact, the layman is too apt to think of the Far East in terms of poverty, disease and filth sprinkled generously with wicked cities teeming with low-type night clubs and nautch dancers! Not that these are not present in spots but in Burma outside of such a cosmopolitan port as Rangoon with its overflow of refugees, one does not see these things. Land of pagodas and temple bells, villages and rice fields, Burma is primarily an agricultural country with an uncrowded population. In fact she is one of the few countries of the East which exports that staple of life, rice.

Being stationed in Mandalay, which is in the central Dry Zone on the flat Irrawaddy River plain, we were surprised to learn that only 42 miles northeast in the hills there was a Government Botanical Garden at the hill station of Maymyo. True, the Gardens had been badly used during the Japanese occupation. The buildings had been burned down,

*Mrs. Arthur Svhla, who holds a doctor's degree in botany and is the wife of a professor of Zoology at the University of Washington, writes of a land with which she is familiar through more than one visit.

many of the trees felled and the entire sprinkling system destroyed. Maymyo was headquarters in turn for the British, Japanese and American commands. Before the war during the British administration, the Gardens had been the show place of Maymyo, nestled among the lush, blue and purple hills at the invigorating elevation of 3,500 feet. The cool climate was a welcome relief from the nerve-exhausting heat of the lowlands. The British had built beautiful homes which were landscaped on the style of the English countryside and the pre-war social life was gay. Government officials sent their families here during the hot season; missionaries maintained a fine rest house for their workers and several high-standard boarding schools flourished.

Our first trip to Maymyo was in July. The road, which is the southern extension of the famed Burma Road, had only just been reopened for general traffic. The Government forces even now were pushing back the insurgents who still held parts of the country along this, the main traffic artery. The road out of Mandalay traverses the wide flood plain of the broad, meandering Irrawaddy River. It stretches along an embankment lined with gold mohur trees (*Delonix regia*) and through villages with pagodas shaded by banyan (*Ficus benghalensis*) or peepul (*Ficus religiosa*) trees while rice fields form a sea of green on either side. At about the 16-mile marker the road enters the tree-covered limestone hills and climbs up a narrow canyon where wild jungle fowl, barking deer and even an occasional tiger may be seen. We swung around 21 hair-pin curves to reach an elevation of 3,000 feet. Although the vegetation to within 30 or 40 feet on either side of the road had been cleared, many individual trees had been left for shade. These were usually silk-cotton trees or kapok (*Ceiba pentandra*) and teak trees (*Theka grandis*) with their huge oak-shaped leaves. Elephants are used to drag the heavy teak logs out of the forests and we stopped to watch three of these huge beasts work with a ponderous methodical intelligence as their "ouzies" directed them with bare feet or a prick with

a sharp-headed stick. We caught glimpses of color high up in the tree branches for July was the month when the big azure blue orchid, *Vanda coerulea*, and the egg-yellow *Dendrobium chrysotoxum* comes into blossom.

The Botanical Garden, which lies about a mile out of Maymyo, was our favorite picnicking place. Here a lovely little artificial lake formed the focal point of the Garden. Trees and shrubs were landscaped around it and planted in groups according to scientific families. Most of the specimens were neatly labelled with their scientific names and their common names in English and Burmese. The native habitat was also on the label. The only buildings were temporary—a working shed and an orchid house both built of woven bamboo slats. A large collection of orchids was piled on and under the benches and many specimens were hanging on nearby trees waiting to be mounted on teak boards or in hanging baskets. Mr. Diekman, the supervisor, told us that he was accumulating hundreds of *Vanda coerulea* plants from villagers who brought them in from the hills. When these become established and are all in bloom, what a sight they will be!

Through our T. C. A. program sericulture was being encouraged. A shipment of special mulberry trees had just been flown in from Japan and the workmen were busy setting them out. A large area adjoining the Garden proper had been acquired and the jungle was being cleared for a mulberry plantation. Although Burma has a native mulberry and silk worms were raised here before the war, the Japanese species of mulberry is superior for it has larger and better leaves. The silk industry, one of the war casualties, is being revived and the Burmese are grasping the opportunity of improving the industry with its revival.

Beds of such familiars as cannas, roses, delphiniums, zinnias, marigolds and alyssum grew luxuriantly here. A rock garden was gay with pink, white and yellow zephyr lilies (*Zephyranthes* spp.). Other native lilies were sending up stout stalks. There were such trees as cherries, oaks, chestnuts, crepe myrtle

(*Lagerstroemia flos-reginae*), the soap-nut tree (*Sapindus* sp.) besides bamboos of various species and conifers such as pines and cypresses. The grass on the lawns was a problem, according to Mr. Diekman, for it was the coarse native grass which had taken over during the war. No machinery was available so to keep it cut some dozen workmen were constantly kept busy swinging their long-handled knives—truly an inefficient method to our machine-minded way of thinking.

From May until October the monsoon rains are prevalent. These provide a greenhouse atmosphere and cuttings and seeds grow vigorously. Although much pottery is made in various parts of Burma, we saw few garden pots. Sections of hollow bamboo or 5-gallon gasoline cans were used to grow plants in. Roses were favorites in all the gardens in town and they grew well at this elevation. Others were sweet peas, petunias, larkspur, coreopsis, gerberas, gladiolus, dianthus, chrysanthemums, dahlias—in fact most of our own common garden flowers.

We made many trips to Maymyo during the year and noted the progress of the Garden with the march of seasons. By October the weather began to cool off and the rains became less frequent. By Christmas the nights were cold but the days beautifully clear and warm. The day before Christmas we drove to Maymyo for Christmas "greens." The night before had been cold and a white frost covered the ground in the morning. As we loaded the jeep with huge poinsettias, pine boughs and branches of flowering cherry which was just coming into blossom, the British consul came by and told us that earlier in the morning he had surprised a black panther walking down this very road! On our way home we stopped at a strawberry farm just outside of Maymyo and bought six baskets of strawberries—the first of the season!

By January the nights were cold even in Mandalay. Frost and an occasional light snow was not uncommon in Maymyo. The flowering cherries were in full bloom and the dazzling

pink contrasted well with the azure blue, clear winter sky. The crepe myrtle trees were covered with lilac-colored blossoms. The forests were brown and yellow for the most part as the trees had shed their leaves. However, splashes of color greeted the eye. The silk-cotton tree was in flower with its huge blood-red blossoms as large as tulips. The flame-of-the-forest (*Ixora* sp.) was brilliant with rich flame-red flowers while the parrot-beak tree (*Clianthus* sp.) was covered with orange-red blooms. The teak trees were masses of tiny whitish blossoms in large upright panicles so that they looked as if they were crowned in mist.

The cold season lasted a regrettably short time. By the end of February the hot dry season was on its way. At Mandalay no rain had fallen since November and none was expected until May. It was hot, dry and dusty in April. Even before breakfast the thermometer had reached the 90's inside the house. We were glad to escape to the cool hills and our trips to Maymyo were frequent. The Gardens had progressed marvelously. The mulberry plantation was thriving. The two-foot high young trees which we had seen in July had been transplanted and had doubled their size. The ground under the oaks was covered with acorns and under the soap-nut tree we picked up handfuls of nuts. The outer fleshy portion produces suds when placed in water and the villagers often use the nuts in place of soap. The lawns had dried up to a tawny yellow. Mr. Diekman had somehow resurrected a power mower with which the hay-like grass was being cut. A new orchid house had been built on the original pre-war foundation and was filled with neatly arranged plants.

So we saw the seasons through in Burma—the monsoons from June to October, the cold, dry season from November to February, and the hot, dry period from March into May. We also saw the progress made by the Burmese in restoring law and order and rebuilding their war-devastated country. To us this reconstruction was typified by that of the Botanical Garden and we watched its progress as the seasons marched by.



Bigleaf Maple

(*Acer macrophyllum* Pursh)

C. FRANK BROCKMAN*

DISTINCTIVE in spring because of its artistic, pendent racemes of fragrant, yellow flowers—followed by the double, winged fruits which typify all maples—and in summer by its exceptionally large leaves, this tree is one that should be familiar to everyone throughout the Puget Sound region. Here, from sea level to elevations of about 3000 feet, in moist locations in the foothills, and along streams of the Cascades, Olympics and other mountainous areas of Western Washington, it finds conditions well adapted to its development. Northward, its range extends to central British Columbia and the extreme southern tip of Southeastern Alaska; to the south it is found along the coast and in the Sierra Nevada—where it occurs to elevations of almost 6000 feet—to Southern California.

Although it grows on a variety of soils, rich bottomlands produce bigleaf maples of the greatest dimensions. In such situations one often finds the bigleaf maple exceeding three or four feet in diameter and almost 100 feet in height. Growing in association with other species typical of low elevations, such as Douglas fir, western red cedar, western hemlock and Sitka spruce, it develops a relatively narrow crown often supported by a clear bole of considerable length. However, it responds to more open conditions by producing a broad, round crown supported by several large branches. Trees of this type, when properly located in gardens or along streets, lend a dominant note to the arboreal beauty of such situations. Rapid growth, characteristic of the

bigleaf maple in its early years, is considerably retarded later, but it may achieve an age of 150 to 250 years. Old specimens of this nature are often characterized by the presence of large burls which are of commercial importance because of the fancy pattern of the grain.

The attractive, fragrant flower clusters which festoon the branches of the bigleaf maple as the leaves develop are polygamous—that is both unisexual and perfect flowers are found in the same cluster (fig. 6). One notes their development eagerly, for they are among the numerous harbingers of spring in this region. The fruit, technically known as a double-winged samara, is typical of all maples, with wings one and one-half to two inches long attached to the plump seed cavity which is densely covered with reddish-brown hairs. A variety of this species—reported in certain sections of southwestern Washington—occasionally has fruits in threes rather than pairs and somewhat differently formed leaf margins. Abundant seed crops are produced by trees in open situations. A large portion of these germinate but, unless the roots of such seedlings reach mineral soil before the advent of dry weather, they do not survive. The leaves, which are borne opposite the branches, are characterized by five palmate lobes. They are the largest among native American maples, often reaching a diameter of eight to twelve inches.

Although many native American maples are characterized by brilliant autumn foliage—such as the sugar maple of the east and our own vine maple—this is, unfortunately, not a feature of the bigleaf maple. Fall finds its foliage a brownish yellow so that its interest at that time is in sharp contrast to its attractiveness in spring.

*This issue, in our series of native Northwest trees, Mr. Brockman writes of the maple so familiar to us all.



Acer macrophyllum in flower in mid-April,
Rhododendron Glen. Height 75 to 80 feet.
(Fig. 6) —PHOTO BY E. F. MARTEN

Lilies for Our Gardens

W. L. FULMER*

THE LILY—the oldest cultivated garden plant—a symbol of our religion—most beloved—most talked about—yet little grown in our gardens. This curious contradiction could be made the theme of the lily movie.

What is a lily—a plant that forms an underground bulb that is made up of loose scales—which also occurs in some species of the allied genus *Fritillaria* and in the genus *Nomocharis*. A lily bulb is simply a storehouse for food material. A plant which makes a flower stem that is covered with leaves, that bears flowers, made up of six parts. A Calla lily is not a lily for it is a solid bulb or tuber, it has no leaves on the stem. There are more than a hundred of such “lilies” that are not true lilies. In fact, so popular is the lily that the public will call almost any pretty flower a lily. All true lilies belong to the genus *Lilium*, which consists of some eighty species.

Why are the lilies not widely grown? Because most of the lilies known today are still wild flowers, identical to those found in the wilderness of the northern hemisphere. To be a good garden plant, resistance to adverse conditions, to pests and diseases is a prerequisite. But also a tolerance to changed conditions, different from those prevailing in its homeland. This tolerance and this resistance can be found in other garden plants mainly when they are of hybrid origin, deriving strength from the characteristics of two, often widely different parents. Our garden tulips, daffodils, iris and roses are all of hybrid origin. Why not our lilies?

Why are there not more hybrid lilies? Lilies grow in many parts of the world, in widely separated regions. They flower in several seasons, from May for some species to November for others. To obtain hybrids, the parent

plants must flower at the same time, in the same location. At Boyce-Thompson Institute in Yonkers, N. Y., it was discovered that lily pollen could be kept in cold storage for many months. At the same time, modern means of transportation makes it possible to obtain fresh and vigorous pollen from the remote regions where they grow wild to destinations in a matter of several days. Pollen from such lilies could be saved to fertilize later ones. Hormones have now been discovered that make hitherto sterile plants set seed—a fascinating story in itself.

What are these hybrid lilies? From crosses between the old, well-known candlestick lilies with the tiger lily from China (used there for thousands of years as part of the staple diet of the farmers, the “cooking lily”) came a series of most vigorous, gaily colored garden lilies of enormous hardiness and tolerance to abuse—the Mid-Century hybrids.

From crosses between weak-growing wild Chinese lilies came the gloriously lacquered red and golden yellow Fiesta hybrids, a race of lilies hardy anywhere in the United States.

From crosses between the old, nodding, orange *Henryi* lily with the stiff trumpet types from China come the new, exotic Aurelian hybrids—gaily colored, huge trumpet lilies of gold or orange—or star-shaped Sunburst lilies in lemon, white or chartreuse.

The originals entering the strain of the *centifolium* hybrids were *L. regale*, *L. Sargentiae*, *L. sulphureum* and *L. leucanthum* var. *chloraster*, better known as *L. centifolium*. *L. Sargentiae* was crossed with *L. regale* and produced *L. “Geo. C. Creelman.”* Hybridizers began making use of all four species and their hybrid derivatives. Jan de Graaff marketed the late Dr. Abel’s hybridizations of outstanding forms. After making interesting crosses for years L. N. Freimann developed pink and yellow variations as well as a fuchsia color.

*Mr. Fulmer, a Seattle resident, is secretary of the North American Lily Society and chairman of their Membership Committee.

Breeders recognizing these colors are endeavoring to intensify them in their strain. The U. S. D. A. Experiment Station at Beltsville, Md., under the direction of Dr. S. L. Emsweller, has originated a number of admirable hybrids. The Potomac hybrids bear spotted pink flowers 6 to 8 inches in diameter facing outward with the petals forming a flat surface and their tips slightly recurved. Witnessed a blooming period last year from July 20 to September 15. "Mountaineer"—dark red with outward facing flowers 3 to 4 inches in diameter. "Cavalier"—bears upward facing yellowish-orange flowers. "Shasta"—bears trumpet flowers that are white on the outer surface and yellow at the base of the inner surface of the petals. "Mega"—light canary-yellow flowers that face outward. "Brandywine"—bears light yellowish-orange outward facing flowers. "Dark Princess" with its dark purple spots and dark border is attractive. Varieties which florists may grow in greenhouses during the winter months are being developed.

The lily movement today rests on a solid foundation. Research work by the leading scientists of the country is solving the lily problems. Propagators have benefited by the chemists developing hormones which when applied to the scales hasten the development of bulblets. The use of colchicine has doubled the chromosomes, especially of the Easter lily,

resulting in larger flowers of a better texture. The research chemist is working on a systemic insecticide material, taken up by the plant and poisoning sucking insects that feed on its sap. Thus virus transmitting aphids will be eliminated. The research workers of the chemical companies have developed new fungicides to control basal rot. Self-sterile lilies may be made fruitful through modern methods.

A healthy lily never sleeps, it is never dormant, it is a living plant and should be out of the ground as briefly as possible. Select bulbs with roots intact, for the root system is vital to its very life. Bruised, rootless, dried-out bulbs usually flower but once and then pass out after a seed crop. The basal plate should be sound and free from injury. As a preventive dust basal plate with a fungicide. If roots are damaged remove the injured portion.

Depth of planting varies. For base rooters the top of the bulb should be its own depth below the surface of the soil. Stem rooting lilies develop bulblets on the stem above the bulb and should be planted deeper than the base rooters. An exception is *L. candidum* (Madonna Lily), which should be planted shallow, not more than an inch under the soil. They ripen in early summer and should be replanted in August as soon as through flowering. Plant lilies in groups of 3, 5 or 7, spacing the bulbs from 6 to 12 inches apart.

RECOMMENDED LILIES FOR SEATTLE GARDENS

<i>Species or Hybrids</i>	<i>Flower form</i>	<i>Height</i>	<i>Bloom period</i>
<i>L. regale</i>			
<i>L. centifolium</i>			
Olympic Hybrids	White trumpets	4 to 6 feet	June, July
Green Mountain Hybrids			
<i>L. Hansoni</i>	Orange-yellow, recurved	3 to 5 feet	June, July
<i>L. Henryi</i>	Orange-yellow recurved, large	5 to 7 feet	July, August
<i>L. Davidi</i>	Saturn-red, recurved	3 to 5 feet	July
Maxwill	Orange-red, spotted	4 to 6 feet	July
<i>L. amabile</i>	Red spotted black	2 to 3 feet	Late June
<i>L. speciosum</i>	Pink and white, various	3 to 5 feet	August, September
<i>L. pumilum</i>	Red, recurved	2 to 3 feet	June
<i>L. hollandicum</i> (<i>umbellatum</i>)	Orange, various	3 feet	
Bellingham hybrids	Various shades of orange, red and yellow	4 to 6 feet	May, June July

The above lilies are easy to grow and after experience has been acquired the more difficult ones such as *L. auratum*, *L. japonicum*,

L. Humboldtii and others can be added to the collection.

Lilies in the Arboretum

B. O. MULLIGAN

ONE of the problems where many rhododendrons and azaleas are grown is that of trying to provide some color in the months from July onwards when their flowering season is over.

It can be done, with varying degrees of success, by the use of later flowering shrubs such as hydrangeas, *Clerodendron*, *Oxydendrum* and *Camellia Sasanqua*, or those which have reliable qualities of fall leaf coloration, including some of the smaller maples, the Stewartias and Vacciniums, and with assistance from appropriate berrying small trees or shrubs, of which several of the mountain ash (*Sorbus*) group and *Cotoneaster lactea* are excellent examples. All these will usually thrive under the conditions suited to the rhododendrons, which is of course essential to success.

Of non-woody plants those with conspicuous foliage, as the plantain lilies (*Hosta* species), *Rodgersia* species, *Podophyllum* and certain others of the same type are very effective. For several decades now true lilies (genus *Lilium*) have been increasingly recognized as most appropriate for planting in groups amongst the lower-growing kinds of azaleas, rhododendrons, shrubby peonies and other spring flowering shrubs to supply that touch of color and often fragrance which is needed from July through September, without affecting or encroaching upon the principal plants in any way.

Experiments in this direction have been going on at the Arboretum since the autumn of 1947, when initial plantings were made in the borders along the east side of the Upper Road opposite Rhododendron Glen, the sandy, well-drained soil being thought very suitable for these sometimes difficult or uncertain but often charming plants.

The largest planting was of 200 bulbs of the Chinese regal lily (*L. regale*) from Idaho stock; these have increased and persisted to the present date and form one of the most delightful and fragrant pictures in the July

scene. Three native American species (*L. canadense*, *L. superbum* and *L. Grayi*) put in at the same period in adjacent beds did not survive more than one season, and *L. Grayi* failed to appear at all in the spring—all possibly due to rodents. However, the more robust hybrid *L. Maxwill* has endured and stayed with us ever since.

The next fall we added *L. auratum*, *L. Henryi*, *L. Willmottiae*, *L. formosanum*—all Asiatic species—and the fine hybrid *L. princeps*, previously named *L. imperiale* by E. H. Wilson. Of those, the first had no staying power, as is unfortunately often the case, nor *L. formosanum*; *L. Willmottiae* remained a year or two but finally disappeared, while *L. Henryi* has flourished on the south side of Rhododendron Glen by the Upper Road and flowers annually, despite the spring depredations of the slugs on the young and succulent stems. Best of the five has undoubtedly been the hybrid, throwing up strong stems 6-7 ft. high each summer and flowering a week or two after *L. regale*. The same season we planted *L. umbellatum erectum* on a sunny bank of light soil facing west, but although these made a bright display in late June for a year or two they failed to increase and gradually disappeared. Evidently they disliked the conditions, for outwardly at least they seemed healthy.

In 1950 we acquired a collection of Miss Preston's "Secretary" hybrids—six varieties—together with the yellow "Coronation," and three bulbs of the California species *L. Parryi*. All were planted at the end of October in another border of similar sandy soil beside the Upper Road, facing west, previously used for small Ericaceous shrubs. For two seasons the Preston hybrids grew well and flowered freely, excepting "Coronation," which failed

→
Group of *Lilium centifolium* hybrids flowering in July in the Arboretum.

(Fig. 7)

—PHOTO BY E. F. MARTEN

to last more than the first year, and likewise the admittedly difficult *L. Parryi*.

Another planting of "Maxwill" in the same site has, however, been as successful or perhaps more so than the previous one; it has vigor and the power to increase which none of these others seem to possess, at least under such conditions.

During this season also a small group of Jan de Graaff's selected form of the Madonna Lily (*L. candidum*) was placed in a border of heavy, often wet soil behind the east greenhouse. These have as a whole succeeded and flowered satisfactorily, although their increase has been slight; slugs here may have been responsible for loss or damage.

Almost all our planting has been done in late October or early November, as soon as the bulbs lose their old stems and are becoming dormant, or can be obtained from the growers. In the fall of 1951 we planted more than 300 bulbs representing six species and five hybrids, the latter including four of the named Bellingham hybrids of *L. Humboldtii*; few if any of these hybrids survive today,

although considerable success was attained with the European *Lilium Martagon* and its handsome dark red variety *Cattaniae*, both raised from seeds, planted on a dry bank amongst heathers or dwarf rhododendrons. *L. superbum*, *L. Wardii*, and *L. Davidii* "Oriole" have to be numbered amongst the failures, though the lovely white form of *L. auratum* var. *virginale*, has bloomed for two seasons and we hope will continue for a while with us.

Three group plantings are worth mentioning. One, of the de Graaff Olympic hybrids of *L. centifolium* (fig. 7) was placed amongst camellias and manzanitas (*Arctostaphylos*) east of the Upper Road opposite Rhododendron Glen—a warm and sunny position, but partially shaded by young Snowdrop trees (*Halesia carolina*). These flowered freely and were most attractive for two or three seasons, then they began to deteriorate, possibly due to lack of humus and plant foods in the light soil, so they have now been moved to a much more shady site near the head of Loderi

(Continued on Page 63)



Plants with Variegated or Colored Foliage

JOHN B. STRANDER*

ANY PLANT whose leaves do not approximate the "normal" green of, for example, an apple tree, can rightfully be considered to fall within this group. Dr. Donald Wyman, on pages 45-46 of his *Shrubs and Vines for American Gardens*, has produced a masterful listing of plants with foliage colored or variegated. He has sub-divided his notes into distinct color areas. Let us examine now a few of these plants sometimes used in our Pacific Northwest.

One of the best color breaks, based on garden usage, is the light green. *Euonymus Maackii*, the Korean spindle tree, maintains such light green foliage throughout the summer. Plants like this serve admirably to enliven otherwise heavy-handed masses. Too much light green results in a weak-appearing design.

The grays and gray-greens, essentially desert colors, have gained popularity recently. Things such as *Senecio Greyii* (or *S. laxifolius*), a sub-shrub, and *Elaeagnus angustifolia*, a taller growing bush, seem to harmonize with colors and finishes used in contemporary architecture. *Atriplex Halimus*, an evergreen which grows like *Escallonia*, shows promise both as a screen subject and as an espalier. Too much gray will give an appearance of superficiality, and it is important to use enough lush green to counteract this effect. Grays do, however, make an excellent foil for the funereal evergreen conifers.

The yellow plants, among which we can mention *Physocarpus opulifolius luteus* and *Acer japonicum aureum* as larger bushes or small trees, are again useful in enlivening dull and dark plantings. A solid planting of yellow foliage suggests weakness and a condition of

general unhealthiness, even though the plants may be in the prime of condition. The above-mentioned maple is also satisfactory as an accent in front of massive stone or dark lumber.

From the more or less solid yellow foliage it is easy to slip into variegations of either yellow, cream, or white with green. This group is the most popular and difficult to use in garden construction. Everyone knows the old favorite Golden Privet, *Ligustrum ovalifolium variegatum*, of which there must be a hundred miles or more in western Washington. Unfortunately, this writer is somewhat prejudiced against variegated foliage and so the following may be slanted. Admittedly situations do arise where a strong variegation is a distinct aid to the design. We can mention again the ability to relieve an otherwise heavy and monotonous planting. Even the Gold Dust Plant, *Aucuba japonica variegata*, is good when used to throw a shaft of light into a dark corner. The mistake, so commonly made, is again that too much variegated material is used in one small area. Especially when the background itself is patterned, as in the case of brick or drop siding. It is just as annoying to see a mass of variegated Weigela, *Weigela praecox variegata*, massed solidly against a white picket fence as to have an unbroken row of variegated Box Elder, *Acer Negundo variegatum*, used for street trees. Neither is pleasant or enjoyable.

The trees with bronze or purple foliage, such as *Prunus cerasifera Blireiana* and *Fagus sylvatica Riversii*, seem to cancel out the primary reason for using deciduous material. This writer has always thought of deciduous bushes and trees as lace to be used to break up the sullenness of the conifers. When we then choose somber colors in the leafy material as well, where do we find respite?

Actually there is much to be said for Rivers' Beech; I am sure no other plant can match

(Continued on Page 64)

*Mr. Strander's article, "The Importance of Plant Materials," published in our Summer, 1953, issue, was reprinted in the Brooklyn Botanic Gardens Journal, *Plants & Gardens* (Winter, 1953-54) as one of their selections from the field of horticultural literature to be cited as "of lasting interest" and recommended "for required reading."

ARBORETUM SPOTLIGHT

Cytisus Battandieri

"The Aristocrat of Brooms"

THE COMMON Broom, covering so many of the sloping banks beside our Pacific Northwest roads with masses of yellow and creamy bloom, is such a familiar sight and the shaggy, loose, spike-like foliage so well known, it is not hard to understand why some horticulturists term it the "weed" of the broom family.

There are, however, many unusual types of this genus less easily recognized as members of the family, such as some of the newer garden varieties which have been introduced, and most decidedly one remarkable species, *Cytisus Battandieri*, "the Aristocrat of Brooms."

A beautiful addition to the list of hardy shrubs, this broom, native of Morocco and introduced to cultivation in England in 1922, has unusually large leaves, Laburnum-like in shape. They are covered with silky hairs like

a fine down and seem to turn the entire foliage network to silver. There, amid the silver, appear the golden-yellow flowers, each one-half inch across, closely packed in oblong clusters hanging gracefully from the branches. They are delightfully fragrant; almost melon-sweet is the fruity fragrance (fig. 8).

Blooming in mid-June, a fine specimen of *Cytisus Battandieri*, now approximately 9 feet high with 12-foot spread, may be seen on the west side of the Upper Road in the Arboretum between the administrative offices and Woodland Garden.

GENE WEBB

✓ ✓ ✓

Below:

Cytisus Battandieri by the Upper Road
in the Arboretum.

(Fig. 8)

—PHOTO BY E. F. MARTEN



The Hardier Ceanothus

LESTER ROWNTREE*

THE LARGE ceanothus clan is still wild enough to be set in its ways. The majority of species insist on summer drought and though some enjoy the snows of high mountains not many will take the continual wet of an open winter. Those from altitude do not easily accept coastal conditions, those from near desert ranges object to moist air and those from California's shoreline and southern valleys buck at cold, lingering dampness. This leaves the Northwest with a limited choice of cocksure successes but ample opportunity to experiment with some glorious blue ceanothus species and varieties from the south. With these the challenge will be to corner all the winter sun possible, and through use of rock, bank and light soil, insure drainage so perfect that no water can linger around the bole.

White-flowered wild lilacs are not as popular as the brilliant blues but a few fluffy ivory clouds are delightful as contrasts. From several snowy species here are two evergreens which do not cringe at wet soil. *Ceanothus cordulatus*, Mountain Whitethorn, is a wide, somewhat muddled-looking shrub of from two to four feet and much broader than it is high. Its thorny branches are silver gray, its inch-long leaves green gray, and its flower clusters deep cream. In the mountains it is associated with Jeffrey and Yellow pine, White fir, *Arctostaphylos patula*, Chinquapin and gleaming gray granite boulders. In June the larger stands of this wild lilac become seas of bloom and the too-sweet fragrance is that of a mountainside or valley filled with flowering lupin. In the high mountains the weight of a seven months' blanket of snow presses the branches low. In late spring, when the snow plow opens mountain roads, the newly released branches, rising almost visibly, seem to rub their eyes, look around with pleasure

at all the tiny alpine plants rushing into growth and hurry on with the season's activities. In captivity *Ceanothus cordulatus* should be perched atop a gravelly slope with conifer needles in the rock soil, with wind and sun in its branches and all the exposure that is possible.

At its lower elevations, in the yellow pine belt of Shasta and Siskiyou Counties, among other nice places, *Ceanothus cordulatus*, taller here, overlaps *Ceanothus velutinus*, Tobacco Brush, a handsomer bush. Varnishleaf ceanothus, *C. velutinus* var. *laevigatus*, is the one to grow near the coast as it drops down to within a few miles of the ocean. Its large finely notched leaves, spicy as balsam, are surfaced with a still glossier lacquer and the glory of its huge flower plumes last from early April into summer. This rich-looking bush enjoys cool moist winters such as please its lovely companions, dogwood, rhododendron, *Holodiscus* and azure blue *Ceanothus thyrsiflorus*. When, beside a stream, a twenty-foot specimen rises from a ground-cover of *Whipplea* sprinkled with white bloom and foams over with creamy panicles, one wonders who it is so seldom used in gardens. Is it because the glittering *Coprosma*-like leaves may be subject to the borer?

I always associate *Ceanothus thyrsiflorus*, Blue Blossom, with the song of the russet-backed thrush and with coast redwood flora, for it likes a warm bank at the edge of woodland on the cozy lower western slopes of the coast ranges. Here, in May, this evergreen bush, perhaps twelve feet tall, is delightful with wild azalea. Blue Blossom is nearing the end of its flowering and azalea is making its triumphant entry. It is a happier garden shrub in northern California, Oregon and southern Washington for there it reaches the height of its development, its dark green, one-inch leaves are glossier and its flowers a richer blue. In southern California it is likely to

*Mrs. Lester Rowntree is the well-known author of several books "for horticulturists, nurserymen and plain gardeners," two of the excellent and useful ones being "Flowering Shrubs of California" and "Hardy Californians."

succumb to pests which infest cultivated plants.

In cold winter climates *Ceanothus integerrimus*, Deer Brush, one of the mountain wild lilacs, is semi deciduous. Because of its long flower panicles this is the ceanothus species accountable for the unsuitable name, wild lilac. When, around abandoned homesteads, *C. integerrimus* is found growing with the real lilac, *Syringa*, a totally unrelated plant, the dissimilarity is easy to see. Deer Brush is a loosely branched shrub, often fourteen feet high and sometimes quite drooping. Its branches are green and its thin soft green leaves may be over four inches long. The glory of its lengthy fluffy flower plumes lasts from May to July and ranges in color from white, through lavenders and blues to dark blue. In the wild, especially in Humboldt County in California, one finds blossoms of clear pink and shrubs having powder blue flowers tinged with pink. In Del Norte County there is an engaging deep clear rose color form and in Oregon, along the Umpqua river, a pink and steel gray form grows among the pure pinks. In some locations the buds are a beautiful pink flushed with gold. Days spent with Deer Brush and its lovely companions suggest ways of growing it in the garden. It may be hanging over a bank with a low, spreading form of deep blue *Ceanothus foliosus* beneath it, or drooping above a stand of pink or purple veined *Iris macrosiphon* and salmon pink *Silene Hookeri*. It mingles with wild roses, waves over shell pink azaleas and later over mauve monardellas. A group of seedlings is likely to produce many pale flowered forms but I have never had a pink flowered seedling—even from seed from a pink bush. (Is this a matter of soil?) Like the somewhat similar *C. Parryi*, and like *C. foliosus*, Deer Brush will stand heavier soil and more water than many a wild lilac and is therefore easier to grow in the Northwest garden than further south. It is not a success on my dry, gravelly coastal slopes.

Evergreen *Ceanothus papillosus*, Wartleaf ceanothus, is another species which will take some winter wet for it is often found on

stream banks, close to the water. Its spreading form, foliage that is rich green, narrow and dimpled, and deep blue, though a bit dumpy, flower clusters make it a desirable garden species. Grow it in humus and gravelly loam—and it will take a little pruning if necessary. One of the loveliest bushes on my hillside and one which visitors sometimes refer to as "that little pine" is an eighteen-year-old *Ceanothus papillosus* var. *Roweanus* from Mount Transquillon in Santa Barbara County. It is fifteen feet across, its evenly and densely foliated branches which mount from the ground to a height of over six feet form a dark and massive exterior. Shortly after Christmas every thick crowded branch is studded with small flower clusters of intensely brilliant blue and it keeps on blossoming spottily late into summer. Individuals of *C. Roweanus* vary in shape and in the amount of gray waxy film with which they protect the pimpled surfaces of their narrow, revolute edged leaves.

There is a group of blue flowered ceanothus species, neither creeping nor erect but widely branching, which is valuable for massing because of the low twigginess of their broad evergreen pads. Most of these are mountain species and among them is gray-barked *C. Lemmonii* from northern California where *Iris Hartwegii* nestles in its outer branches and is released when deer nibble the bushes into little balls. There is *C. austromontanus* which on Cuyamaca mountain in San Diego shelters dwarf mountain phloxes, leptodactylons, and wind-stunted *Calochortus albus* and the *Bloomerianum* variety of Humboldt's lily. In extreme exposure this ceanothus is semi deciduous.

A large choice of evergreen creeping or slightly taller, wide and matting wild lilacs now delights the ceanothus grower. One need no longer wring one's hands because the lovely *C. prostratus*, Mahala Mat, disapproves of garden conditions for its variety *occidentalis* holds fewer grudges and has accepted what is called cultivation (which, in the case of most natives, means being left pretty much alone in the garden), and *C. pumilus*, Siskiyou Mat, has proved amendable in the region of its

habitat which is the mountains of northern California and southern Oregon. *Prostratus'* variety has all the attractive points of the type. It has the same manner of clinging to stump, log, root and rock, dark holly-like leaves, twinkling burst of honey-scented bloom in shades of lilac, mauve and blue and decorative red horns on the seed pods. Plant this variety among stones and lead its trailing branches over the rocks, for if they lie on wet ground the plant becomes diseased. Blue flowering *C. fresnensis*, Fresno Mat, from the western slope of the Sierra Nevada, is similar, though its seed pod horns are shorter, and it serves the same purpose in the garden.

And then there are the evergreen creepers, *C. divergens*, *C. pinetorum* and *C. diversifolius*. *C. divergens* may be more of a sprawler than the other two and is not a faithful follower of contours. It hangs over banks in Napa and in Lake Counties, and on Mount St. Helena it is lovely with *C. foliosus*. Sometimes a stem rises into a little leap, bends again leaving a stiff hump in its outline, or it may form a flat mat ten feet across. It likes the half shade of *C. Parryi* or *Arctostaphylos Stanfordiana* and its blue flowers and pointed seed pod crests are as red as those of the Mahala Mat. Give it a bank of leafmold and loam and never crowd it, for it likes its neighbors to keep their distance.

Ceanothus pinetorum, from the Upper Kern River Basin, resembles a flat *C. Jepsoni*—prickly leaves, pale blue flowers, wrinkled horns on the seed pods and all. If you grow this Kern ceanothus put some decomposed granite in its humus. *C. diversifolius* is distinctive for it is the only ceanothus with branches long and limp enough to look as though they flowed. You will find it streaming down abrupt banks of muddy or dusty logging roads in the Transition Life Zone, its thin blue green leaves forming a flat and flocculent eight-foot-long curtain. All this energy thrown into the drapery business seems to leave little for flowering for the blue bloom is sparse and when moved to the coast it loses all its pep. My plants never made more than a two-foot drop and flowered only twice during their

lives of five years. In its home it sometimes grows with *C. prostratus* and the two do a good job of glorifying cavities left by uprooted forest trees and preventing erosion on cuts. This evergreen grows in one of the most glorious godetia zones, tall yellow wallflowers are ranked along the slopes behind it, and seedling violet and dainty annual *Linanthus* take refuge in the shelter of its branches.

Probably some of the more rampant rug-making wild lilacs from the south (taller than the prostrates, very wide but not erect) would not be hardy in the Arboretum. Such a one is evergreen *C. griseus horizontalis*, justly popular because of large handsome foliage and profuse blue bloom. Some of the mats along the nearby coast are 30 feet across. But one can find low broad forms, not distinctive enough to be varieties, of *C. foliosus*, *C. papillosus* and other hardier species to take their places and also fall back on such lovely natural and horticultural hybrids as *C. thrysiflorus repens*, a most satisfactory evergreen ground cover with small shiny leaves and brilliant blue flowers. Some of these natural hybrids are now extinct, for new roads and new developments have wrecked their homes. It is unfortunate that *C. impressus* has no low spreading form for such a wide small evergreen, with wrinkled little leaves of dull green and flowers of intense bright blue, would be worth growing. But *C. impressus* is an individualist, even though it does hybridize like mad and though, on Nipomo Mesa, San Louis Obispo County, crouching wind-blown bushes may still be seen, it keeps to its erect habit. At the edges of the eucalyptus forests in Santa Barbara County, one of the few natural homes of this species, there are specimens fifteen feet tall and twenty-three feet through. It is a speedy grower and profuse bloomer though my notes taken at the Arboretum say that flowering there is poor compared to what it is in the south.

Most of the French crosses, hybrids having deciduous *Ceanothus americanus*, a native of cold winter regions, as one parent, are hardy in the Northwest. Of these, six-foot "Gloire

(Continued on Page 64)

New Zealand Veronicas

MARGARET E. WATT*

THE New Zealand veronicas comprise a large group of shrubby plants of the *Scrophulariaceae* family, the larger number in the genus *Hebe*, a few belonging to *Parahabe*.

They are endemic chiefly to the three main islands, with some also in the surrounding islands. About 100 true species are recognized. Many of those formerly classified as species are now known to be varieties.

Hebes are all evergreen shrubs or sub-shrubs, growing in the temperate zones of the country and showing many variations; they alter considerably under different environment and cultivation so that it is often very difficult to determine whether the plant is a species or a variety. This leads to much confusion in classification.

Plants of the genus *Parahabe* have a more trailing habit, with the flowers solitary or with very sparse racemes of flowers, the plant being more herbaceous in character, although remaining evergreen. This group was formerly classed as *Veronica*.

The general characteristics of *Hebe* are: Evergreen opposite leaves, flowers alternate, cruciform, in terminal or axillary racemes, usually quite conspicuous. Color red, white, purple or blue. Sepals 4, stamens 2, capsule 2-celled. White flowers are the most common.

The New Zealand Hebes can be roughly divided into three groups:

1. Shrubs with entire leaves, not appressed. Example *H. salicifolia*.
2. Shrubs with minute scale-like leaves closely appressed to the stem. Example *H. cupressoides*.
3. Shrubs with toothed, fleshy leaves. Example *H. Lavaudiana*.

GROUP 1

In this group are many of the larger, showy Hebes, with diversity of growth and conspicu-

ous flowers, ranging from white through blue to purple and crimson; most of these can be grown successfully in the temperate zones of America. They do not require very special soil.

Hebe salicifolia Forst. The willow-leaved Hebe, called Koromika by the native Maori, is one of the most common of the group, found abundantly in the South Island of New Zealand; also in the mountain regions of the North Island, and in isolated areas in Stewart Island. I have found it growing in inaccessible ledges at 4,000 feet and also at sea level, where it is sometimes 10 feet in height. Its usual height is 6 feet growing in the wild. Leaves are linear, 2 inches or more in length and the white flowers are in conspicuous racemes (fig. 9). Plants with mauve or purple blue flowers are sometimes found. *H. salicifolia* hybridizes readily with *H. speciosa* and *H. macrocarpa* and many variations are found.

Var. *gigantea* Cockayne is a native of the Chatham Islands, 50 miles east of the New Zealand main islands. It is very similar in characteristics to *salicifolia* but not very hardy away from its natural habitat, where it grows to 40 feet in height.

Var. *Kirkii* Cheeseman. Has smaller leaves than the type plant and grows from 6 to 12 feet in height. The racemes of white flowers are 4 to 8 inches long and the branches are dark brown.

Hebe macrocarpa Vahl is a plant closely allied to *H. salicifolia* but with narrower and thicker leaves and larger white flowers. Var. *latisepala* Kirk has deep violet flowers.

Hebe amabilis Cheeseman, is a tall-growing, large-flowered shrub with many of the characteristics of *H. macrocarpa*. The flowers are $\frac{1}{3}$ inch across, also white. It is found growing sparsely along the coast on the sand dunes in the South Island. Var. *blanda* is more dense and shorter than the parent.

Hebe macroura Hook. This varies in height from 1 to 5 feet, growing strongly at lower

*Miss Watt, a professional horticulturist, spent four and a half years at the Botanic Garden in Dunedin, New Zealand, so is well acquainted with the flora of that region.

levels. The leaves are almost sessile, obovate oblong or linear oblong, often 3 inches in length. The flowers are in dense racemes 2 to 4 inches long. Color is white or pale blue.

Hebe speciosa R. Cunn. Maori name Napuka. This is a very attractive shrub, varying from 2 to 5 feet, and has many varieties; also many true hybrids. It is a lowland shrub with crimson flowers $\frac{1}{3}$ inch in diameter in dense racemes. The leaves are dark green on top and reddish green beneath, oblong obovate, 4 inches long. Leaves are much thicker than most of the genus, having a two-layered epidermis. The plant is endemic to the South Island, growing along the coastal regions where the salt spray reaches it.

Var. *rubra* Hort. has redder flowers and leaves overlaid with red. Var. *variegata* Hort. (Anderson). See Bailey. Large blue and white.

"Autumn Glory" is probably a variety of *speciosa* and an horticultural introduction. It has purple flowers in fall and grows from $2\frac{1}{2}$ to 3 feet. It does not seem to be quite as hardy as its parent.

Hebe Traversi—This is also endemic to the South Island and is found along river beds and in the foothills of the Southern Alps in Otago. The leaves are $\frac{3}{4}$ to 1 inch long and nearly $\frac{1}{3}$ inch broad, leathery and flat, giving it the appearance of a whipcord veronica but with larger leaves. Flowers are white in dense racemes 1 to 2 inches long. This plant does not come true from seed and many variations are found. It grows from 4 to 6 feet and flowers in mid-summer.

Hebe formosa (R. Br.) Bailey. A species endemic to Tasmania, flowering in early summer. It has thick oblong or lanceolate leaves and pale lilac flowers on short racemes.

Hebe monticola (the mountain-loving Hebe) Found in the mountain regions from the north to the central parts of the South Island. The leaves are almost overlapping and narrow into a thick petiole. Leaves 1 inch long. White flowers are in dense heads, very showy, blooming throughout summer.

Hebe buxifolia Kirk (New Zealand Box). This is a small, compact shrub, sometimes 3 feet in height, with glossy green leaves

sheathed to the stem, giving the plant a very compact appearance. The flowers are also closely attached to the stems in small white racemes. It is endemic to Stewart Island and the South Island and is found growing in semi-bog along the coast in open country. This is quite hardy in temperate U. S. A.

Var. *prostrata* Cockayne. A low growing prostrate type found in boggy subalpine meadows in Stewart Island and the South Island. I have not seen it in flower. It is very sparsely branched.

Var. *odora* Kirk. More compact than its parent with sweet scented white flowers. This is endemic to Stewart Island and is found on open heaths along the coast.

An interesting cross between *H. buxifolia* and *H. propinqua*, a whipcord type, can be seen in the University of Washington Arboretum collection. This has more the habit of *H. propinqua*.

GROUP 2

The Whipcord Veronicas

The whipcords are shrubs with minute, scale-like leaves close appressed to the stem and resembling a whip, hence the name. Sixteen species are recognized.

These are found in the Southern Alps of New Zealand growing in shingle slips at varying altitudes and are well adapted to rocky sections in the garden, needing only a minimum of care.

The whipcords are particularly liable to alter under different conditions and juvenile and adult plants show distinct variation, the juvenile form often in no way resembling the adult. If grown in moist warm conditions the young plants will often have very succulent leaves.

Hebe Hectori. This is very much like a whip in appearance, having leaves very appressed to the stem and looking like scales. Flowers are white, in short racemes near the tips of the branches and not very showy. It makes a compact dense shrub to about 2 feet.

Hebe cupressoides. Similar in appearance to *Hectori*, but leaves stand away from the stem like a cypress and often have the appearance of short spines. The plant often has

a looser habit of growth and will grow taller.

Var. *nana* is found in cultivation and is probably a horticultural variety. I have not seen it in the wild. This is very dwarf and compact, only a few inches high, and does not seem to be too hardy in Washington. Some of these will grow to a foot in height. It does not flower here.

Hebe pinguifolia Hook. This is a decumbent shrub less than a foot high with white flowers borne at the tips of the branches and a generally gray appearance to the whole shrub.

Hebes of this group are very similar in habit and appearance, particularly *H. coraloides*, *H. lycopodioides*, *H. tetrasticha* and *H. epacridea*, the last two being very harsh to the touch.

H. propinqua and *H. Armstrongii* have a much looser habit of growth. All will grow well in the scree garden. There are several good specimens of whipcord veronicas in the Arboretum, *H. Buchananii* among them.

Two shrubs usually classed with the whipcords, but varying from the type, are *H. elliptica* and *H. chathamica*.

Hebe elliptica Forst. is native to New Zealand and the southern tip of South America. In Stewart Island this shrub is very compact, with leaves not appressed, showing the change in type. Flowers are white in prominent small racemes at the tips of the branches. In the South Island the leaves are often larger and flatter.

Hebe chathamica is a native of the Chatham Islands and is very similar to *H. elliptica*.

GROUP 3

In this group the plants have fleshy toothed leaves. They are rock living plants, growing on rocks and cliffs along the Banks Peninsula in the South Island. Very showy plants.

Hebe Lavaudiana Raoul. This is a small, stout, herb-like shrub with a prostrate stem, from which branches ascend to 1 to 3 feet. The flowers are white (sometimes purple) and pink in the bud. It blooms in late spring. This plant is now very scarce in the wild as it has been destroyed by forest fires and animals. It is grown in gardens in New Zealand.

Hebe Hulkeana (New Zealand Lilac).

Found on cliffs and in river gorges in the northwest coastal section of the South Island. Often growing at 3,000 feet. This is one of the showiest of the veronicas, with sprays of lilac colored flowers in terminal loose panicles in late spring and early summer. Not reliably hardy in the northwest of the U. S. A.

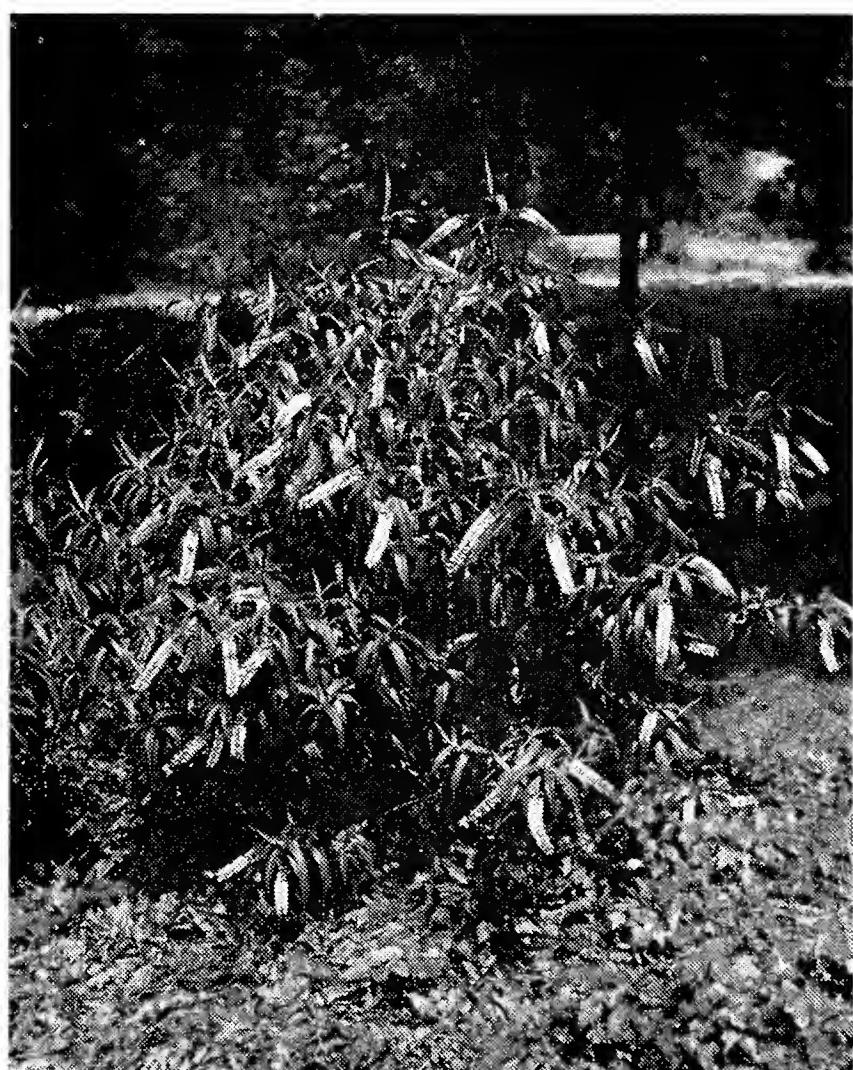
Parahebe

A distinct group of plants formerly classed as *Veronica* and very similar to the common speedwell. These are semi-herbaceous sub-shrubs of a creeping habit, found growing over rocks in partially damp areas in the lower passes and mountain meadows. Flowers are borne in profusion, solitary, or in loose sparse racemes of a few flowers. Leaves are ovate, serrated, $\frac{1}{2}$ inch in length. Late summer flowering. All will grow in moderate climates where there is little extreme of temperature, providing they get sufficient moisture.

Parahebe catarractae and variety *irrigans*. Very showy, growing to 9 inches high, with solitary white flowers spotted with red.

P. Lyallii. Three inches high, white flowers

(Continued on Page 68)



Above:

Hebe salicifolia flowering in the Arboretum collection in mid-July.

(Fig. 9)

-PHOTO BY E. F. MARTEN

Lady of the Lilacs

ELIZABETH H. HANLEY*

IN Woodland, Washington, lives Mrs. Hulda Klager, known locally as "Lady of the Lilacs." She will be 90 years old the tenth of May. She is the only American woman credited in "Lilacs for America" as a breeder of new varieties of lilacs on a commercial scale. She is credited with originating sixty-two, but as a matter of record her garden at one counting contained over three hundred of her seedlings (fig. 10).

"Lilacs for America," 1941 edition, makes this statement: "It is difficult to evaluate Mrs. Klager's work. Living far apart from other lilac growers, she has not used as seed parents, nor has she apparently ever seen the newer Lemoine varieties." This declaration emphasizes the uniqueness of Mrs. Klager's genius. All other lilac hybridizers in America and Canada had every facility for obtaining the best productions of European growers; they were in constant touch with other horticulturists in plant breeding fields and they had the best of equipment for their experiments. To evaluate Mrs. Klager's work it is necessary to know something about the woman herself and the environment in which she worked and lived.

Hulda Thiel was born in Germany. Her family emigrated to America in 1864 and her first birthday was spent on the high seas coming here. The family first located in Wisconsin, moved later to Minnesota and finally located permanently in Lewis County, Washington, near Woodland, when Hulda was thirteen. She married Frank Klager in her early teens and settled down to the life of a dairy farmer's wife on a farm that was yearly inundated by the waters of the Lewis River. As the waters brought fertility to the soil the

inconvenience was an accepted part of living. To enable her to grow her beloved flowers her husband graded up the ground around the house to an elevation of seven feet in a "ninety-foot square." Here she made a blossoming island above the floods and as every inch of soil was precious she learned to choose her flowers and shrubs carefully. This necessity for elimination played an important part in her advancement in horticulture later on. Here on this flowering island Hulda reared her children, attended to all the duties of wife, mother and housewife, yet found time to study botany, read whatever garden books were obtainable and diligently study the seeds-men's catalogues. There were small funds for purchase of plants so she grew from seeds shrubs and trees as well as flowers. All this was good training for her later career.

Hulda's father had built a comfortable, roomy house on the outskirts of Woodland and after his death Hulda's mother sold the property to her. Fortified by the knowledge gained by years of restrained effort, Hulda began the garden which became locally famous for its wealth of bloom and the generosity of the owner in sharing it with all who loved growing things.

Very early in her gardening career she had noted the improvement or deterioration of flowers grown from seed she had saved. An elementary book on botany gave her the answer, but it did not occur to her that flowers could be cross-pollinated by hand until she read a book written by Luther Burbank upon the subject. Hulda was recovering from a serious illness and faced with a long convalescence when Fate put the book in her hands. Perhaps never before in an active life had Hulda had time on her hands. She read avidly everything she could obtain upon cross-pollination and when she was able to go into her garden again she started her experiments. It is related that she hybridized many flowers in her exploratory work, but her serious efforts

*Mrs. E. B. Hanley, our Oregon member of the Editorial Board, writes "we are growing a number of the Klager lilacs at Hanleylands. They have a beauty all their own—they are vigorous—free flowering and possess a luminosity of coloring not found in other hybrids. They arrest the eye in any grouping. Klager lilacs should always be grown on their own roots to get the best results."

were devoted to lilacs. The results are all the more remarkable considering the material with which she had to work.

She had purchased a collection of seven lilacs advertised in a newspaper by an Eastern grower. Two of these were discarded as they had inferior flowers; two were destroyed by horses. The three which remained were:

Madame Casimir Perier (Lemoine 1894)
a double white.

President Grevy (Lemoine 1886)
a double blue.

Ludwig Spaeth (Spaeth 1883) purple.

These were the Magic Three, the ancestors of her earliest hybrids. She used these three originally and then cross-pollinated with her own productions. She had definite objectives in view. First, vigorous and disease resistant plants; without a healthy plant all labor to achieve color and form would be lost. Second, extend the color range into clear blues, pinks and rose. Third, variations in form of truss and larger individual flowers. That she succeeded in achieving these results is demonstrated by quoting descriptions of some of her originations introduced by R. M. Cooley of Silverton, Oregon, and I quote: "'My Favorite' is probably the most widely distributed of the Klager productions. It is a double with dark, purplish-blue flowers that resemble a bunch of grapes when first opening. 'R. M. Mills,' a double deep pink almost rose, trusses of astonishing size. 'Mrs. Morgan Cooley'—the color is clear orchid—no other lilac I have seen is this shade, blooms are perfectly shaped, semi-double and trusses exceptionally large. 'Ostrander Cooley,' possibly Mrs. Klager's finest double. Deep carmine with shades of heliotrope and silvery rose. Very fine form."

Hulda Klager named her favorite productions after her family, her friends and public personages she admired. Will Rogers was one. She gave seedlings to garden clubs and civic organizations. These were named after cities and towns.

For a number of years, what had started as a hobby became a flourishing enterprise. The lilacs really sold themselves. What advertising they had outside of a few nurserymen

came from enthusiastic plant lovers and the friendly press. When the first novelty wore off, Hulda did not attempt to keep her productions in the limelight. The new French hybrids were being exploited by commercial growers and after Hulda's husband's death she was so occupied by the labors of production that she had time for little else. Her sales were becoming limited to customers who bought from her directly from her own garden.

Then her son, Fred, came home to live with her. Together they started to rebuild the business. Hulda had produced countless new seedlings—some of great merit—which had not been named and none sold. These were being catalogued and made ready for sale when the disastrous flood of 1948 wiped out the entire garden. A few trees survived, but all the lilacs died, "The Magic Three" along with their progeny.

(Continued on Page 67)



"Lady of the Lilacs" . . . Mrs. Hulda Klager
in her garden.
(Fig. 10)

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Special Notice

To keep memberships in the Arboretum Foundation in good standing, dues should be paid during the month payable. Active memberships more than three months in arrears will be dropped and THE BULLETIN will be discontinued.

Arboretum Membership Blank

<input type="checkbox"/> Active	\$ 5.00
<input type="checkbox"/> Contributing	10.00
<input type="checkbox"/> Supporting	25.00
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<input type="checkbox"/> Affiliated Garden Clubs and other organizations.....	10.00

The Arboretum Foundation,
University of Washington Arboretum
Seattle 5, Washington

I hereby apply for membership in the Arboretum Foundation and remittance for same is enclosed to cover dues for the next succeeding 12 months.

Name.....

Address

All memberships are non-assessable.

Notes and Comment

Fifth Annual Rhododendron Show

THE Rhododendron Show jointly sponsored by the Arboretum Foundation and the Seattle Rhododendron Society was held in the south corridor of the University of Washington Stadium, May 6 to 9, inclusive. The choice of location for the show turned out to be fortunate since a space approximately 400 feet long by 50 feet wide with ample ventilation permitted effective location of the plant displays on both sides of a wide corridor.

The weather had been unfavorable for rhododendron bloom for several weeks prior to the show so that as a result there was not as wide a choice of varieties as would have been expected at this time of the year. A frost a week prior to the show ruined the bloom of a number of the nurseries and gardens. Notwithstanding the weather, however, the show was probably the most beautiful and effectively staged of any Rhododendron Show held in Seattle.

Over five thousand people attended and a substantial profit was realized which will go into the Floral Hall fund of the Arboretum Foundation.

The principal winners were:

Class 1: Display group, 350-500 square feet.
The Frederick & Nelson Perpetual Award Silver Trophy was won by the Prentice Nursery & Decorating Company.

Second, Anhalt's Shur-gro Nurseries.
Third, Van's Northgate Nursery.

Class 2: Display group, 200-350 square feet.
First, Richmond Nurseries,
Richmond Beach.

Second, King of Shrubs Nursery,
Bellevue.
Third, Mr. D. G. Graham.

Class 3: Display group, less than 200 sq. ft.
First, Flora Markeeta, Edmonds.
Second, Mr. T. F. Martin.
Third, Hopkins Nursery, Bothell.

Class 4: Three specimen plants, hybrids or species.

First, Dr. W. B. Hutchinson.

Second, Mrs. Henry Isaacson.

Third, Mr. E. R. Johnson.

Seattle Trust & Savings Bank Perpetual Award Silver Trophy for Best Plant in the Show: Donald G. Graham—*Rhododendron Augustini*.

The Seattle Rhododendron Society Achievement Award Silver Cup for Best New Hybrid Seedling raised by an exhibitor: Endre Ostbo—*Rhododendron* “Mrs. Holford” x “Mrs. Donald Graham.”

Best Cut Truss in Show: Mr. and Mrs. William Calvert—*R. “Beauty of Littleworth.”*

A full list of the winners will be published in the next quarterly bulletin of the American Rhododendron Society.

The program lists the classes as well as the committee chairmen. It also contains some very instructive articles on the culture of rhododendrons, treatment of rhododendron pests and diseases as well as a selected list of varieties for garden planting.

Copies of the program can be obtained from the Arboretum Foundation office, Seattle 5, Washington.

Open House in the Arboretum during Rhododendron Week, May 3 through 9, was a satisfying one to all concerned. Through the week volunteer hostesses were stationed at two points where, at tables under colorful umbrellas, they greeted visitors and sent them on two marked routes, either down Azalea Way through Woodland Garden and return, or through Rhododendron Glen to the Lookout and return. These short walks covered the peak bloom locations for the week.

Much credit is indeed due Mrs. Leonard Wilcox, chairman, who worked tirelessly and under whose capable supervision the volunteers were contacted and hours arranged. Mrs. Wilcox speaks highly of the participating groups and their excellent cooperation and extends her thanks to all (regretfully too many to mention individually).

Sunday was the busiest day. A total of over

1500 visitors requested information at the two hostess tables, received pertinent literature and were sent on the Rhododendron and Azalea Trails.

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Lilyites and their friends will be trekking to Seattle this July 16, 17, 18 to attend the 7th Annual Lily Show of the North American Lily Society, Eagles Hall, 708 Union Street.

This will be the first National Lily Show to be held in the bulb-producing section of the Northwest and first show to be held on the Pacific Coast.

The secretary of the society is Mr. W. L. Fulmer, 505 Boylston Avenue North, Seattle 2, who has written on his favorite subject for us on other pages of this BULLETIN.

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Donations to Arboretum From Garden Clubs, Units, Etc.

1954

Arboretum Unit Council—	
for Tape Recorder	\$ 127.17
for any purposes	1,000.00
— Unit No. 1—	
for Floral Hall	227.00
— Unit No. 9 (Else Frye)—	
for books	43.65
— Unit No. 10—	
for maintenance	35.00
— Unit No. 11 (Earthworms)	29.40
— Unit No. 26 (Lilian McEwan)—	
for greenhouse pot washer	25.00
— Unit No. 30 (Juanita Graham)—	
for peony plants	37.00
— Unit No. 37 (Diligent Diggers)—	
for bulbs	35.00
— Unit No. 41 (Frances Macbride)—	
for pair of “Vocatron” intercom units	68.64
Mercer Island Garden Club—	
for Winter Garden	150.00
Seattle Audubon Society—	
for sign	45.00
North End Flower Club—	
for maintenance	50.00
Seattle Garden Club—	
for fertilizer	68.00
for Azalea plants (imported)	130.50
for maintenance	375.00
Snoqualmie District—Washington State Federation of Garden Clubs—	
for tree for Arbor Day planting.....	18.50
Tacoma Garden Club	10.00
Mr. Ceber Baillargeon—	
for books	105.00
Mrs. Goldie Tober—	
for Floral Hall	25.00
	\$2,604.86

ARBORETUM NOTEBOOK

This department is published for correspondence and pertinent comments by experienced growers on interesting plants and their culture. We solicit your questions but space limitation necessitates the publishing of only such answers as we deem of general interest.

GARDEN HINTS . . .

JUNE

Anemone nemorosa, the charming wood anemone, seems to like to be divided in early summer just before or immediately after the leaves have disappeared. They resent disturbance at any time but if there is good reason to divide them they should be replanted in woodland loam and leafmold and not deeply. The white ones and the double white ones (which will grow nicely in more sun) add to the planting. The pale blues and the deep blues are especially appealing. Var. *Allenii* is one of the loveliest and lengthens the season of bloom.

Daphnes do not do well for everybody. Many times *D. Cneorum*, the "Garland Flower," just sits, turning its back on all our efforts. This is true of many growths in the garden. How much better to know what does best for each of us and then let them go on each year, affable and unfailing.

Clematis florida var. *bicolor*, a rare, low climber (6-8 ft.) is lovely over a low wall. It has creamy-white blossoms 2-3 in. wide, saucer-shaped with centers of violet blue. It begins blooming in June and continues for three months.

Abelia floribunda, an evergreen from Mexico, is charming planted against a west wall. Its slender branches have trumpet-shaped blossoms in clusters, beginning in June. It has many possibilities only realized by an imaginative gardener.

Abutilon vitifolium will stand a mild winter in our climate, but it is fine enough to be planted in a large pot or tub and protected through the winter. In Mr. Ihrig's garden it grew to a height of fifteen feet or more before it was cut down by a severe winter. Its gray leaves, not unlike an ivy in shape, are charming, and the blossoms like a drooping hollyhock of soft, satiny quality and a silvery-lavender or white color.

JULY

Don't fail to note the Eucryphias. Many gardeners think these one of the best, if not the best, of all July and August flowering shrubs.

Primroses, if taken up to make room for other plantings, should not be heeled-in in groups until ready for fall. They should be divided, the leaves cut back, the long root cut off and each plant placed in good soil in a half shady place to develop fine plants for next year. Tulips and other bulbs may be carefully dug and heeled-in in some corner where they are kept moist until the leaves have died down naturally.

Many herbaceous plants may be rooted from cuttings now, including the Dianthus and Saxifrage families. For a cutting medium two parts of clean sand and one of peat is a safe mixture. Carnations are easily increased by layering. Loosen the surface soil around a plant and scatter a layer of good potting soil. Some of the old leaves on the stems should be removed and the underside of the stem slit halfway through from one joint to the next. Press this opened stem into the good soil and carefully bend the tip upward. Pegs of wire, cut and bent like hairpins may be used to secure the stem in place. In this way one plant will furnish enough plants for a short edging.

AUGUST

August is not too early to plant corms of the hardy cyclamen and autumn-flowering crocus. Spring-flowering crocus may be planted much later.

All old flowering spikes on the perennials should be cut back as they go out of flower.

A seldom seen mid-summer flower is *Platycodon grandiflorum*, the Balloon Flower. It is a true perennial from Japan, 2-3 feet high, which blooms plentifully and over a long period. The color of the species is a rather unusual, pleasing blue but many varieties

have been developed with varying shades of blue and pink. A named variety, P. Bristle Belle, has double lavender-blue blooms; P. Bristle Bride is a beautiful white variety and P. Bristle Blush has double pink flowers.

The heathers may now be propagated by cuttings but layering is more simple and a quicker means of increase. Many new plants may be obtained by firmly pegging down the outside growths around a plant where a peaty soil has been placed. When well rooted these branches may be cut from the parent making new plants.

* * *

Cottage tulip "Golden Measure" is perfect for naturalizing as once planted it fends for itself. The writer planted some eighteen years ago and they have persisted and multiplied despite shameful neglect. They are a soft, lively yellow which perks up the garden without causing disharmony.

Eugenia apiculata is one of the lovely shrubs the writer coveted on her visits to San Diego. As the Eugenias are considered tropical shrubs, reluctantly she gave up the hope. However, when she saw them listed in a San Francisco nursery catalogue, hope returned. She found that any forced growth froze the following winter. So it never gets artificial watering, the foliage being allowed to harden before the cold weather. Its habit of growth is much like *Osmanthus Delavayi*, the small leaves are evergreen; the white flowers, which bloom in June, are dainty and interesting and the dark drupes are said to be edible. It layers easily.

Oriental poppy, "Helen Elizabeth," which blooms in June, is a lovely salmon and has no black markings on its petals. It is easily grown; should be planted in a sunny spot and, if you want large blossoms, should be divided every three years and must be protected from slugs. Otherwise let it alone as it is not particular about soil and likes to rest during the summer. The foliage commences to grow with the autumn rains and remains green all winter. The cold weather does not bother it.

E. D. H.

If you have had trouble bringing the little ground dogwood (*Cornus canadensis*) in from the wild you might try growing it from cuttings. Make your cutting well below the node which you will see at about the middle of the stem. We dipped ours in a hormone powder and used the same cutting compost which we use for members of the Heath Family. A year later these small plants were planted in the woodsy soil around a large rhododendron, and before long we found new shoots coming from those nodes below which we had taken our cuttings.

PAT BALLARD

PLANT NAMES

The Ranunculaceae or Crowfoot family contains many illustrious names. The following are among the best known:

Buttercup (*Ranunculus*), Clematis (*Clematis*), Columbine (*Aquilegia*), Meadowrue (*Thalictrum*), Peony (*Paeonia*), Hellebore (*Helleborus*), Monkshood (*Aconitum*).

Ranunculus is the name chosen by Pliny (A. D. 23-79) for this family, meaning a little frog, as many of the members love to live in the water or in marshy places.

Linnaeus named the illustrious family of Magnolias for Pierre Magnol (1623-1715), professor of medicine and botany and director of the Montpellier botanic garden in Southern France.

Buddleia was not named for Buddha, as so many suppose, but for Adam Buddle, an English botanist, who died in 1715.

PLANT COMBINATIONS

"Newport Pink" Sweet William in front of Canterbury Bells.

Mixed Sweet Williams with Foxgloves.

Heuchera with *Pachysandra*.

Maidenhair fern with lilies.

Phlox divaricata with *Ajuga reptans*.

*

Question: Is there any self-pollinating *Skimmia* which will berry heavily?

Answer: The best *Skimmia* to produce berries is the one known as *S. Foremanii*. This type has perfect flowers and is able to produce

berries without cross pollination from another plant. It can be fairly easily propagated by cuttings taken in late summer or early fall.

Question: If this is kinnikinnick, will it transplant well from the woods to a rather hot, dry bank in my yard, and how should I do it?

Answer: The specimen sent is undoubtedly kinnikinnick (*Arctostaphylos Uva-ursi*). In our experience it does not transplant easily from the woods, unless you get small pieces with well-developed roots. It is much more easily propagated by cuttings taken in the late summer or early fall and planted out in their permanent position the following summer; or you could probably buy young plants from many of the nurserymen in this area.

There is no doubt that it will do well on a dry bank, as you frequently find it growing in such places in the wild.

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List of Plant Names

(Continued from Winter, 1953)

<i>Lychnis</i>	Greek, lamp	<i>maculatus</i>	spotted
<i>Lycium</i>	Greek name	<i>Maddenia</i>	for Major E. Madden, plant collector in India
<i>Lycopersicum</i>	wolf-peach	<i>Madia</i>	Chilean name from Arabian name
<i>lycopodioides</i>	lycopodium-like	<i>Maesa</i>	of one species
<i>Lycopodium</i>	Greek, wolf-foot	<i>magellanicus</i>	Straits of Magellan region
<i>Lycoris</i>	a Roman actress	<i>magnificus</i>	magnificent, distinguished
<i>Lygodium</i>	Greek, twining	<i>Magnolia</i>	for Pierre Magnol, died 1751
<i>Lyi</i>	for J. Ly, a collector in China	<i>magnus</i>	large
<i>Lyonia</i>	for John Lyon, plant collector	<i>Magorianium</i>	for E. J. P. Magor,
<i>Lyonthamnus</i>	for W. S. Lyon, and	<i>Mahernia</i>	Cornwall, England
<i>lyratus</i>	Gr. thamnus, shrub	<i>Mahonia</i>	anagram for Hermannia, a related genus
<i>Lysichitum</i>	lyrate, pinnatifid with	<i>Maianthemum</i>	for Bernard McMahon, American horticulturist
<i>Lysimachia</i>	large terminal lobe	<i>majalis</i>	Gr. May-flower
<i>lysimachioides</i>	Greek, a loose cloak	<i>majesticus</i>	of May
<i>lysolepis</i>	Greek, for King Lysimachus	<i>major</i>	majestic
<i>Lythrum</i>	Lysimachia-like	<i>malabaricus</i>	greater, larger
<i>Maackia</i>	with loose scales	<i>Malacocarpus</i>	of Malabar
<i>Macadamia</i>	Greek, black blood	<i>malacoides</i>	Gr., soft and fruit
<i>Macaranga</i>	for Richard Maack,	<i>malacospermus</i>	soft, mucilaginous
<i>macedonicus</i>	Russian botanist	<i>Malacothrix</i>	soft-seeded
<i>Macleania</i>	for Dr. John Macadam	<i>Malcomia</i>	Gr., soft hair
<i>Maclura</i>	of Victoria, Australia	<i>maliformis</i>	for Wm. Malcolm,
<i>Macodes</i>	Madagascar name	<i>mallotum</i>	a London nurseryman
<i>macranthus</i>	Macedonian	<i>Mallotus</i>	apple-form
<i>macrandrus</i>	for John McLean, British	<i>Malope</i>	fleecy, woolly
<i>macradenia</i>	merchant in Lima, Peru	<i>Malpighia</i>	Gr., woolly
<i>macro-</i>	for William Maclure,	<i>Malva</i>	Pliny's name for mallow
	American geologist	<i>malvaceus</i>	for Marcello Malpighi, Italian naturalist
	from machos, length	<i>malvaeflorus</i>	Latin name from Gr.
	large flowered	<i>Malvastrum</i>	meaning soft leaves
	with large anthers	<i>Malvaviscus</i>	mallow-like
	large glanded	<i>mamillatus</i>	mallow-flowered
	large, big	<i>Mammillaria</i>	Malva-like
		<i>mammulosus</i>	Gr., sticky mallow
		<i>Mandevilla</i>	with nipples
		<i>Mandragora</i>	Lat., mamilla,
		<i>mandshuricus</i>	nipple-like tubercles
		<i>Manettia</i>	with small nipples
		<i>Mangifera</i>	for H. Mandeville,
		<i>manicatus</i>	British Minister to Argentina
		<i>Manihot</i>	named by Hippocrates, signifying
		<i>manipurensis</i>	plant hurtful to cattle
		<i>mannophorum</i>	of Manchuria
		<i>manopeplum</i>	for Xavier Manetti
		<i>Manzanita</i>	of Florence, Italy
		<i>Maranta</i>	from Hindu mango and
		<i>Marattia</i>	Latin, to bear
		<i>margaritaceus</i>	Latin, long-sleeved
		<i>margaritifera</i>	native Brazilian name
		<i>marginalis</i>	from Manipur, Assam
		<i>marginatus</i>	bearing a collar
		<i>marginellus</i>	with a loose covering
		<i>Margyricarpus</i>	Spanish, little apple
		<i>Mariae</i>	for B. Maranti,
		<i>marianus</i>	a Venetian botanist
		<i>Mariesii</i>	for J. F. Maratti,
			Italian botanist
			pearly
			pearl-bearing
			marginal
			margined
			narrow margined
			Gr., pearly fruit
			for Mary Hance,
			wife of Consul at Canton
			of Maryland (Terra Mariana)
			for Charles Maries,
			plant collector

<i>marilandicus</i>	of Maryland	<i>mellitus</i>	honey-sweet
<i>maritimus</i>	maritime	<i>meloformis</i>	melon-shaped
<i>marmoratus</i>	marbled, mottled	<i>Melothria</i>	Gr., name for Bryony
<i>maroccanus</i>	of Morocco	<i>membranaceus</i>	membranaceous
<i>Marrubium</i>	ancient Latin name	<i>meniscifolius</i>	crescent-leaved
<i>Marsdenia</i>	for Wm. Marsden, died 1836	<i>mengtszense</i>	from Mengtze
<i>Marsilea</i>	for Luigi Marsigli of Bologna, Italy	<i>Menispernum</i>	Gr., moon-seed
<i>Martinianum</i>	for John Martin, gardener at Caerhays, Cornwall	<i>Mentha</i>	for Gr. nymph, Minthe
<i>Masdevallia</i>	for Dr. Jose Masdevall, Spanish botanist	<i>Mentzelia</i>	for Christian Mentzel, German botanist
<i>Matricaria</i>	from Latin, mater, mother	<i>Menyanthes</i>	probably from Gr. Menanthos, moonflower
<i>matricariaefolius</i>	matricaria-leaved	<i>Menziesia</i>	for Archibald Menzies, botanist and surgeon
<i>matronalis</i>	pertaining to matrons	<i>Mercurialis</i>	for Mercury
<i>Matthiola</i>	in honor of P. Mattioli, Italian botanist	<i>meridionalis</i>	southern
<i>Maurandia</i>	for Mme. C. P. Maurandy of Cartagena, Spain	<i>Mertensia</i>	for Franz Carl Mertens, German botanist
<i>mauritanicus</i>	of northern Africa	<i>Meryta</i>	from a verb, to roll
<i>Maxillaria</i>	Latin, maxillae, jaws	<i>Mesembryanthemum</i>	Gr., middle-embryo-flower
<i>maximus</i>	largest	<i>mesoleucus</i>	half white
<i>Maytenus</i>	Mayten, Chilean name	<i>Mespilus</i>	old Gr. name
<i>Mazus</i>	Gr., tubercles in mouth of corolla	<i>metallicus</i>	metal-like
<i>Meconopsis</i>	Ger., poppy-like	<i>metaloides</i>	metal-like
<i>Medianum</i>	for George Medd of Bhame, Burma	<i>Metrosideros</i>	Gr., heart of iron
<i>Medeola</i>	for Medea, the mythical sorceress	<i>metrum</i>	a measure
<i>Medicago</i>	Gr. name used by Dioscorides	<i>Metternichii</i>	for Prince Metternich of Austria
<i>medicus</i>	medicinal	<i>Meum</i>	old Gr. name
<i>Medinilla</i>	for Jose de Medinilla y Pineda	<i>mexicanus</i>	Mexican
<i>mediopictus</i>	striped at the center	<i>micans</i>	glittering, sparkling
<i>mediterraneus</i>	of the Mediterranean	<i>Michauxia</i>	for Andre Michaux, French botanist
<i>medius</i>	middle	<i>michauxioides</i>	Michauxia-like
<i>medullaris</i>	of the marrow or pith	<i>Michelia</i>	for P. A. Micheli, Italian botanist
<i>megacalyx</i>	large calyx	<i>Miconia</i>	for F. Mico, Spanish physician
<i>megacanthus</i>	large-spined	<i>micracanthus</i>	small-spined
<i>megacarpus</i>	large-fruited	<i>micranthus</i>	small flower
<i>megalanthus</i>	large-flowered	<i>microcarpus</i>	small-fruited
<i>megalophyllus</i>	large-leaved	<i>microcephalus</i>	small-headed
<i>megapotamicus</i>	of the big river, Rio Grande, Uruguay	<i>microchilum</i>	small-lipped
<i>megarrhizus</i>	large-rooted	<i>Microcycas</i>	small cycas
<i>megaspermus</i>	large-seeded	<i>microdon</i>	small-toothed
<i>megastachyus</i>	large-spiked	<i>microgynum</i>	small ovary
<i>megastigmus</i>	large-stigma	<i>Microglossa</i>	small tongue
<i>megeratum</i>	passing lovely	<i>Microlepis</i>	Gr., small scale
<i>mekongense</i>	from River Mekong, W. China	<i>microleucum</i>	small white
<i>melananthus</i>	black-flowered	<i>Micromeria</i>	small part
<i>melanocentrus</i>	black-centered	<i>micropetalus</i>	small-petaled
<i>melancholicus</i>	melancholy, drooping	<i>microphyton</i>	small plant
<i>melanocarpus</i>	black-fruited	<i>micropterus</i>	small-winged
<i>melanocaulon</i>	black-stemmed	<i>microstemonus</i>	of small filaments
<i>melanococcus</i>	black-berried	<i>Microstylis</i>	small style
<i>melanoxyロン</i>	black-wooded	<i>Mikania</i>	for Prof. J. G. Mikan, Prague
<i>melantherus</i>	black-anthered	<i>mikanoides</i>	mikania-like
<i>Melanthium</i>	Gr., black-flowered	<i>Milla</i>	for J. Milla, gardener to the Spanish court
<i>Melasphaerula</i>	a little black ball	<i>millefoliatus</i>	thousand-leaved
<i>Melastoma</i>	Gr., for black and mouth	<i>miliaceus</i>	pertaining to millet
<i>meleagris</i>	speckled like a guinea-fowl	<i>militaris</i>	military
<i>Melia</i>	ancient Gr. name for ash tree	<i>Miltonia</i>	for Viscount Milton
<i>Melianthus</i>	Gr., honey-flower	<i>mimetes</i>	imitative
<i>Melica</i>	old name for sweet grass or Sorghum	<i>Mimosa</i>	Greek, a mimic
<i>Meliosma</i>	Gr., meli, honey, and osma, scent	<i>mimosoides</i>	mimosa-like
<i>Melissa</i>	Gr., bee	<i>Mimulus</i>	Latin, little mimic
<i>Melittis</i>	Gr., bee	<i>mimus</i>	mimic
<i>melleus</i>	pertaining to honey	<i>Mimusops</i>	Greek, ape-like
<i>mellifera</i>	honey-bearing	<i>minax</i>	threatening, forbidding
<i>melliodorus</i>	honey-scented	<i>miniatus</i>	cinnabar-red
		<i>minimus</i>	least, smallest
		<i>minor</i>	smaller

<i>minutiflorus</i>	minute-flowered	<i>montigenus</i>	mountain-born
<i>minutifolius</i>	minute-leaved	<i>Moraea</i>	for R. Moore, English botanist
<i>minutissimus</i>	very or most minute	<i>Morenia</i>	for G. Moreno,
<i>minutus</i>	minute, very small		Peruvian naturalist
<i>Mirabilis</i>	wonderful	<i>morifolius</i>	mulberry-leaved
<i>Misanthus</i>	Greek, miskos, a stem and anthos, a flower	<i>Morinda</i>	Latin, morus, mulberry and indicus, Indian
<i>Mitchella</i>	for Dr. John Mitchell of Virginia	<i>Morus</i>	ancient Latin name
<i>Mitella</i>	diminutive of <i>mitra</i> , a cap	<i>mosaicus</i>	parti-colored, tessellated
<i>Mitraria</i>	mitre-shaped pods	<i>moschatus</i>	musky
<i>mitratus</i>	turbaned	<i>moulmainense</i>	from Moulmein
<i>mixtus</i>	mixed	<i>moupinense</i>	from Moupin
<i>modestus</i>	modest	<i>mucronatum</i>	with a sharp point
<i>moesiacus</i>	of Moesia now Bulgaria	<i>Mucuna</i>	Brazilian name
<i>moldavicus</i>	of Moldavia, Rumania	<i>multibracteatus</i>	many-bracted
<i>mollis</i>	soft	<i>multicaulis</i>	many-stemmed
<i>Molinia</i>	for J. Molina, writer on Chilean plants	<i>multicavus</i>	with many hollows
<i>mollicomum</i>	soft-haired	<i>multiceps</i>	many-headed
<i>mollissimus</i>	very soft	<i>multicolor</i>	many-colored
<i>Molopospermum</i>	Gr., striped or scarred seed	<i>multicostatus</i>	many-ribbed
<i>Moltkia</i>	for Count J. D. Moltke, a Dane	<i>multifidus</i>	many times parted
<i>Molucella</i>	diminutive from Molucca	<i>multiflorus</i>	many-flowered
<i>moluccanus</i>	of the East Indies (Moluccas)	<i>multifurcatus</i>	much forked
<i>Momordica</i>	bitten, from appearance of seeds	<i>multijugus</i>	many in a yoke
<i>monacanthus</i>	one-spined	<i>multilineatus</i>	many-lined
<i>Monarda</i>	for Nicolas Monardes, physician of Seville	<i>multinervis</i>	many-nerved
<i>monadelphus</i>	one group (of stamens)	<i>multiplex</i>	many-folded
<i>monandrus</i>	one-stamened	<i>multiradiatus</i>	with numerous rays
<i>Monardella</i>	diminutive of Monarda	<i>multisectus</i>	much cut
<i>Moneses</i>	Greek, a single delight	<i>munitus</i>	armed, fortified
<i>mongolicus</i>	of Mongolia	<i>muralis</i>	of walls
<i>monilifera</i>	bearing a necklace	<i>muricatus</i>	roughed by means of hard points
<i>Monodora</i>	single gift	<i>Musa</i>	for Antonius Musa, physician to first Roman emperor
<i>monocephalus</i>	single-headed	<i>musaicus</i>	musa-like
<i>monogynus</i>	of one pistil	<i>muscaetoxicum</i>	fly poison
<i>monoicus</i>	monoecious	<i>Muscari</i>	Latin, referring to musky odor
<i>monopetalus</i>	one-petaled	<i>muscipula</i>	fly catcher
<i>monophyllus</i>	one-leaved	<i>muscoides</i>	moss-like
<i>monopterus</i>	one-winged	<i>muscivorus</i>	fly-eating
<i>monopyrenus</i>	with one stone	<i>muscosus</i>	mossy
<i>monosematum</i>	with one blotch	<i>mutabilis</i>	variable
<i>monosepalus</i>	one-sepaled	<i>mutilatus</i>	mutilated
<i>monospermus</i>	one-seeded	<i>Mutisia</i>	for Jos. C. Mutis, Spanish botanist
<i>monostachyus</i>	one-spiked	<i>myiagram</i>	the fly-catcher
<i>monspecculanus</i>	of Montpelier	<i>myoporoidea</i>	myoporum-like
<i>Monstera</i>	name unexplained	<i>Myoporum</i>	referring to resinous dots on leaves
<i>monstrosus</i>	monstrous, abnormal	<i>Myosotidium</i>	Greek, like a mysotis
<i>montanus</i>	pertaining to mountains	<i>Myosotis</i>	Greek, mouse ear
<i>Montia</i>	for Giuseppe Monti, Italian botanist	<i>Myrica</i>	ancient Gr. name of a shrub derived from <i>Myrica</i>
<i>monticolus</i>	inhabitating mountains	<i>Myricaria</i>	

(To Be Continued)

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Lilies in the Arboretum

(Continued from Page 45)

Valley, still on light soil though with more humus available.

The second was of a number of bulbs raised from seeds sent as hybrids but which have proved to be *L. Henryi*; these were placed at the south end of the *Pieris-Leucothoe* collection, north of Rhododendron Glen—a well-shaded position, naturally moist at most seasons but not wet, and adequately drained. Here they have grown as well as those at the head of Rhododendron Glen, though the weak stems leave much to be desired, and have produced some seeds.

Thirdly, in the summer of 1950 we raised a quantity of plants of *L. formosanum* var. *Wilsonii* from New Zealand seeds, which surprised us by flowering almost 100 per cent in September-October, 1951, in a frame. Seed was saved from these by ripening it in the greenhouse, and subsequently more than 200 small bulbs were planted out on the south bank of Loderi Valley in late September, 1953; some were in bud or even in flower at the time, but we hope the majority will bloom en masse again this autumn. Such rapidity of flowering from seed amongst lilies is remarkable, and perhaps confined to this species.

Again in the fall of last year many more bulbs were planted, largely due to the generosity of Mr. Jan de Graaff, of Gresham, Oregon. All have been placed in fresh sites along the Upper Road, in large groups of 50, 100, or in one case ("Mid-Century hybrids") 250 bulbs of a kind, amongst young hollies,

camellias, and peonies, with the hybrid "Fire-flame" in a bed of low grey junipers near the offices. Most should flower during July and be an added summer attraction, especially this year when the North American Lily Society meets in Seattle. In addition, the group of "Maxwill" has been increased by 75 home-raised bulbs, and a new one formed of 40 bulbs of *L. speciosum* var. *rubrum* raised from seeds from the U. S. Dept. of Agriculture's station at Glenn Dale, Md.

In conclusion it must be admitted that we have only succeeded with the most vigorous and easily grown kinds of lilies, but these, if planted in sufficient quantity under appropriate conditions and given the minimum of care—which is all that is possible here—will certainly provide colorful groups from the latter part of June until late September or early October—a very desirable result for the cost and effort involved.

* * *

Following the practice of many other horticultural journals, the ARBORETUM BULLETIN began with the Spring, 1954, issue to number all pages of one volume consecutively. This will facilitate greatly in compiling the index for each volume which appears in the Winter issue.

* * *

Sunset Magazine, May, 1954, with an excellent article, "On a Sunny Sunday in May—Visit One of These Northwest Arboreta," gives most interesting data on our Arboretum, including a photograph of Azalea Way and a map of the Arboretum.

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Plants with Variegated or Colored Foliage

(Continued from Page 46)

the beautiful velvet of its newly unfolded leaves. Were we to have such a tree for the singular reason alone of providing cutting material it would be enough. Add to this the graceful branching and the superb bark and the case is heavily weighted in its favor.

The Purple Filbert, *Corylus Avellana fusco-rubra*, is a large bush sometimes trained as a tree. When in tree form it continually suckers, even after twenty-five years. The leaves in this case come out in the spring with vivid color but gradually return to green towards midsummer.

All of the Japanese red maple forms, *Acer palmatum*, belong in this group. The weeping types, usually grafted on a standard, are highly prized as garden subjects. The upright bush types, on the other hand, are more easily used, except where the setting contains rocks of considerable size.

The summary of all this indicates that the writer feels that the more any plant deviates from a normal green color the more care will have to be exercised in its placement. This does not mean there are no places for colored foliage, but the places are much rarer than current usage would suggest. The quality of smooth finish and flowing mass seems more important than continual contrast and conflict.

The Hardier Ceanothus

(Continued from Page 50)

de Versailles," with large leaves and pale blue flowers, is the best known. "Marie Simon" has pink flowers. Though these hybrids take the same treatment as the exotics in the garden, they are not a success in southern and central California, having proved short-lived. New crosses are continually being made by Californian hybridizers. One of the latest is between *C. americanus* and the gorgeous but temperamental *C. cyaneus*. This semi-deciduous, blue flowered cross was made by Dr. L. W. Lenz of Rancho Santa Ana Botanic Garden at Claremont and is to be used for further breeding work. Most of the named wild lilacs in California gardens and nurseries have originated in cultivation and are therefore cultivars.

Ceanothus bloom on my gravelly coastal hill extends over six months and if one counts trusty old *C. spinosus*, blossoms may be found the year around. Flowering begins in December with *C. Roweanus*, reaches its height in March or early April and continues spottily into July. Watering during late spring drought sometimes produces another spurt of bloom, especially from *C. foliosus*. If the field worker is lucky enough to follow ceanothus bloom in the byways of the Pacific Coast, beginning in sheltered southern valleys near the coast, continuing in desert mountain ranges, working north and into high altitudes, from Christmas to late summer, he will encounter stands of glorious ceanothus bloom.

If a ceanothus seedling from the mountains

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is brought down to lower altitudes where there is more rain than snow it should be planted on a slope of light soil and be given a hole large enough to contain a foot or more of rocks at the bottom. Deep planting shortens life for no tall growing ceanothus can stand moisture around the neck. This method should also be used by those who want to grow wild lilacs beside a watered lawn. The digging of seedlings is constructive and not destructive for in this road-making age species having very limited ranges are being wiped out by tractor and roadside scraper.

Ceanothus seed germinates quicker when hot water is poured over it and it is allowed

to soak for several hours. Seed collected from isolated stands will come true but there is no depending on the chance seedling which springs up in the garden where many species are grown, and by the time the seedling is old enough to bloom and declare its color it is too large to transplant. Vegetative propagation is done by cuttings or, from stem rooting creepers, by layering. Unless used as an espalier a ceanothus needs little pruning though if the center of a dense bush is kept open it will live longer. Thumb shaping—the pinching back of young shoots—is sometimes practiced but this may turn a graceful bush into an unlovable ball.

CEANOTHUS SPECIES AND HYBRIDS IN ARBORETUM

May, 1954

Name of Species	Size	Date Planted	Notes
arboreus	12 ft. tall, 6 ft. wide. Stem 5 in. diam. at soil line.	ca. 1950	On south side of greenhouse. Damaged by winter, 1953-54. Flowering May, 1954
cuneatus	18x14 in.	Oct. 1950	Badly cut back by winter and by past winters. Flowering May, 1954
foliosus (austromontanus)	5x8 ft.	1949 & 1950	Flowering by rock garden, May, 1954
gloriosus		Prior to 1942	Flowering by rock garden, May, 1954
griseus var. horizontalis	Prostrate, 2½ ft. diam.	Nov. 1953	Survived winter in good shape
impressus	Not well established	April 1953	Branches above snow line burned badly
Lemmonii	3½x8 ft.; main stem 2½ in. diam.	June 1949	Flowering May, 1954
Lobbianus	3x5 ft.; stem 1½ in. diam.	June 1948
papillosus	4½x10 ft.; stem 1½ in. diam.		Flowering May, 1954
papillosus var. Roweanus (seedling)	6½x4 ft.; stem 2 in.	May 1950	On west end of greenhouse. Burned by frost. Flowering May, 1954
pumilus	Prostrate, 2½ ft. diam.	ca. 1948	Flowering May, 1954
rigidus	4x4 ft.	June 1948	Flowering May, 1954
rigidus albus	1½x2 ft.	July 1952	Not yet flowered
thyrsiflorus	2½x15 ft.; main stem 3 in. diam.	June 1949	Flowering late May, 1954
thyrsiflorus var. repens	1½x3½ ft.	ca. 1949	Flowering May, 1954
Veitchianus	9x2½ ft.	June 1952	Open bush; suffered in winter 1953-54
velutinus var. laevigatus	6-7x3 ft.	May 1950	Native; flowering May 1954
Name of Hybrid	Size	Date Planted	Notes
"Autumnal Blue"	5x5 ft.	Dec. 1951
burtonensis	3x3 ft.	June 1952
"Delight"	6-7x8 ft.; main stem 2 in. diam.	July 1947
"Gloire de Versailles"	7x14 ft.; main stem 4 in. diam.	ca. 1948	Hardy to about zero F.
"Mary Lake"	Not well established	June 1952	Survived winter where covered with snow Frozen and cut back Flowering May, 1954
"Theodore Payne"	5x3 ft.	? 1949	

BOOK REVIEWS

The Glenn Dale Azaleas, by B. Y. Morrison. U. S. Dept. of Agriculture. Agriculture Monograph No. 20. U. S. Govt. Printing Office, Washington 25, D. C. (Oct., 1953). Price 40 cents.

THIS small pamphlet, only 85 pages, represents the published account of twenty-four years of azalea hybridizing by Mr. Morrison and the staff of the U. S. Plant Introduction Gardens, Glenn Dale, Md. Small though it is, it should prove invaluable to anyone interested in growing or breeding azaleas.

The first eighteen pages are devoted to a discussion of the purposes, methods and breeding stock which led to the development of the Glenn Dale hybrids. Although the amateur may find the going difficult in spots, this section has bits of very useful information that should prove helpful in growing these azaleas.

The azalea breeder will find a wealth of material for hybridizing hardier azaleas. Mr. Morrison's discussion of the parentage, program and observations on the Glenn Dale hybrids should be as fine a source of ideas to the hybridizer as his azaleas will be a source of breeding stock.

Primarily, the monograph is given to descriptions of the Glenn Dale azaleas now released to the public. Some 450 named clones are described in brief but adequate paragraphs. The name, Plant Introduction number, parentage, habit, flower color and time of flowering are given for each clone, with occasional notes or comments on certain ones. Included in this section are some really excellent photographs of a number of the hybrids.

These descriptions should give the azalea fancier a good idea of the wide range of types to which he can look forward when these hybrids become more generally available. Many of them have been or will be planted in the Arboretum.

J. WITT

1 1 1

Trees for Town and Country—A Selection of Sixty Trees Suitable for General Cultivation in England. Compiled by the Association for Planning and Regional Construction; Lund, Humphies & Co., London, 1949 (2nd ed.). Price 25s.

AS the sub-title indicates, this book is of particular value in England. However, those who have a special interest in this subject will find the illustrations of particular interest and value. Many familiar native North American trees are included—such as the black locust, catalpa, Lawson cypress, swamp cypress, Douglas fir, honey locust, scarlet oak, western red cedar, tulip tree and giant sequoia. Others include many species that are familiar as trees along streets and in parks in the United States.

Illustrations in each case include a large photograph, together with line drawings indicative of its relative form and size at different ages, as well as line drawings of significant botanical details such as foliage, flowers and fruit. The photographs have been obtained from a number of sources. The line drawings are the work of S. R. Badmin, author-artist of "Trees in Britain." The text was prepared by Miss Brenda Colvin, an outstanding English landscape architect. In

addition to a brief description of each tree—together with data on planting, growth, soil, climate and habitat—the text in each case often includes some historical material of value.

In addition to the interesting information, and the excellent photographs and sketches, this book is attractively bound and will make a handsome addition to a library shelf.

C. FRANK BROCKMAN

1 1 1

The Lily Year Book 1954, published by the Royal Horticultural Society, Vincent Square, London, S. W. I. Price, \$1.65.

THE 1954 Lily Year Book is now available from the Royal Horticultural Society. These Year Books are unique in their appeal to amateurs and experienced growers alike.

The initial article is by Mrs. Mary G. Henry of Gladwyne, Pa., U. S. A., well known in Seattle where she has lectured on lilies and other plants which she has collected. There are good descriptions and photographs of lily species in addition to those of her own fine hybrids and those of other growers on a world wide scope.

The second article titled "On Lily Gardens" by Alice Maxwell was to this reader a gem in horticultural information. Her directions for growing lilies, their place in the garden and ease of propagation are explicit and easy to follow. This article is worth much more than the price of the book.

For the plant explorer there are two articles. One relates the finding of interesting species and their variations in the Balkan peninsula. The other is a detailed account of plant hunting (with emphasis on lilies) in west Nepal.

For those interested in the genetics of hybridizing there is a scientific treatise of second generation hybrids of *L. auratum* and *L. speciosum* in New Zealand. This will be of especial interest in the Pacific Northwest where these crosses are being constantly made.

Since we know little of *Notholirion* or *Nomocharis* in America, the articles in the Lily Books may interest our growers to have these bulbs to offer our gardeners.

Of interest to our commercial growers of Easter lilies is an article by Dr. Neil Stuart, a plant physiologist of our Department of Agriculture from Beltsville, Md. His subject is "Effects of Storage Temperatures on the Forcing of Easter Lily Bulbs." By extensive experiment he has been able to advance the time of blooming and even to increase the number of blooms, by storing bulbs at low temperatures for designated periods of time.

Finally the engaging debates of the members of the Lily Group of the R. H. S., held several times throughout the year, cover all phases of lily culture. In these panels by expert growers all of these subjects are covered by questions and answers, which in the interest of accuracy are sometimes heated, but not acrimonious and the terse, right to the point conclusions are informative.

As usual the photographs illustrating the Lily Book are beautiful. A valuable set of line

drawings of all of the principal varieties of lilies is accurate and interesting. A worthwhile volume.

SALLY BUNGE

"*Plants Indoors—How to Grow and Arrange Them*"—C. R. Boutard. Published by Putnam & Co., Ltd., 42 Great Russell St., London, England. Price 18 shillings.

MODERN architecture is bringing the garden indoors and with it bringing many new problems to the householder. What to plant indoors? What to do to keep the plants in luxurious growth? How to insure future supplies without constant re-investment?

Answers to these questions are to be found in Mr. Boutard's book. There is a chapter on choosing plants, another on care, including information on plant troubles, and another on repotting, transplanting and propagation; 57 pages are devoted to these subjects with many fine photographs showing examples of indoor plantings in Holland, Norway and England.

Eighty-seven pages are devoted to a quick reference portion which the author calls a "Guide for Indoor Plants." Here, under the headings of "Latin and English Name of Plant—Family and Country of Origin—Description—Disorders—Propagation—Cultivation and Remarks," all of the information is reduced to its minimum.

In a field where material is hard to find, this book "Plant Indoors" should fill a need and be a boon to the gardener who desires a successful indoor garden.

MRS. HILDA SWIFT

Winners for receiving the greatest number of new Arboretum Foundation Memberships in the recent membership drive closing May 10 were:

First Prize—*Magnolia rustica rubra* to Mrs. A. F. Riggle, 19552 4th Avenue South. Mrs. Riggle is chairman of a new Arboretum Unit No. 53, "Merry Tillers."

Second Prize—*Clematis lanuginosa candida* to Arboretum Unit No. 26, "Lilian McEwan," Mrs. Kenelm Winslow.

The Arboretum Foundation's annual Membership Meeting, held in the fall, will be of particular note this year in that arrangements have been made to have Mr. E. H. M. Cox of Perthshire, Scotland, address the group. Mr. Cox is an author of renown—two of his works familiar to many of us are "Farrer's Last Journey" and "Plant Hunting in China." The date, October 19, has been set—the place and further details will be included in the invitation which will be forwarded to all members prior to the occasion.

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Lady of the Lilacs

(Continued from Page 55)

Fred died very shortly after the flood and Hulda was as one stunned. Family, friends and neighbors were amazed when she finally announced, "I will remain here where I belong. The good earth is still here. I will devote the rest of my life to rebuilding the garden. I have faith."

So Hulda began anew, with the help of a school boy, to restore the fertility of the earth in her garden. Friends, neighbors and well-wishers over the states of Oregon and Washington sent out the word to "bring Mrs. Klager's lilacs back to her." And came they did and they are still coming for the story has a happy ending. The sunset of Hulda Klager's life has brought back the colors of her beloved lilacs. Her granddaughter and her family have come to live with her and manage the business.

So, Happy Birthday, Hulda Klager! We salute a valiant woman and a great gardener!

Authorities

I am indebted to Mrs. Klager's granddaughter, Mrs. Irvin Van Eaton, for family history and facts regarding Mrs. Klager's experiments and achievements.

"Lilacs for America," A. H. Scott Horticultural Foundation, Swarthmore, Pa., 1942.

"The Lilac," by Susan Delano McKelvey, New York, 1928.

New Zealand Veronicas

(Continued from Page 53)

spotted and lined with red.

P. Bidwillii has white or lavender blue flowers.

P. linifolia has pale rose flowers which usually hang down in loose racemes. This species is found in the Garvie Mountains.

P. canescens has blue flowers which are solitary and axillary.

P. Hookeriana is the only one found in the volcanic regions of the North Island.

The New Zealand veronicas should find a place in many gardens in the Pacific Northwest and in northern California near the coast. Many were planted in Golden Gate Park in San Francisco by the late John McLaren. I have not attempted to describe all the species classified.

References

"Plants of New Zealand," R. M. Laing and E. W. Blackwell (1906).

"The Flora of New Zealand," W. Martin. 3rd edition.

"Standard Encyclopedia of Horticulture," L. H. Bailey.

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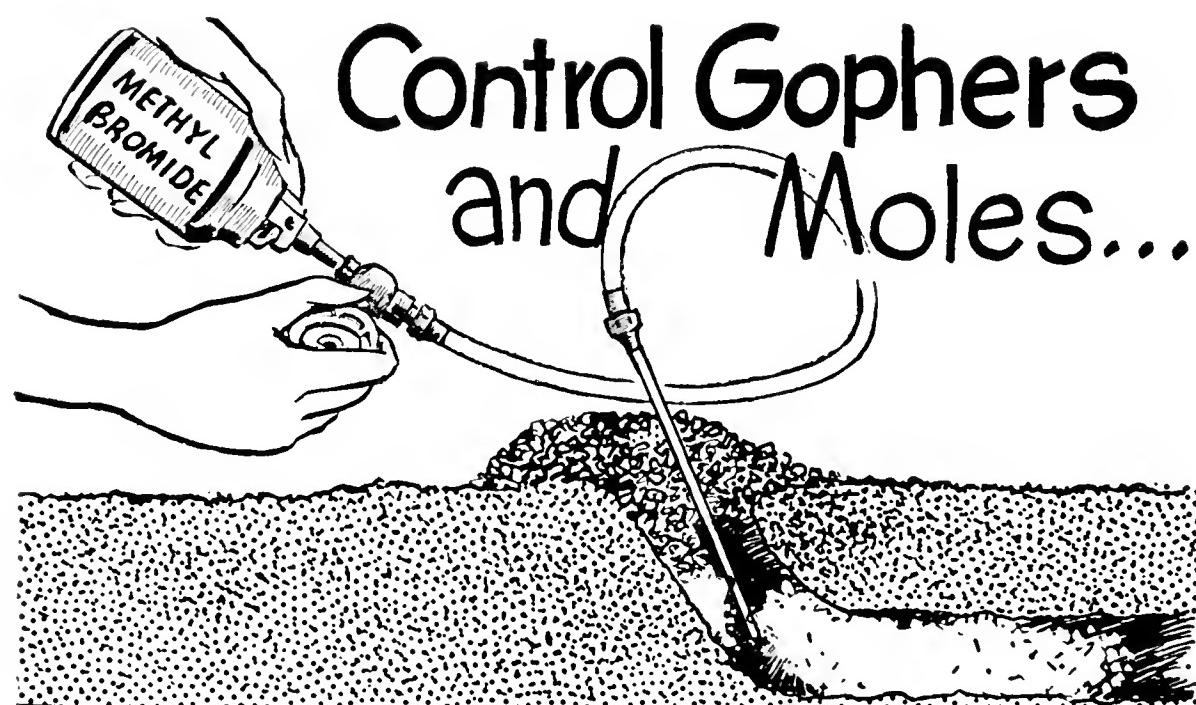
June, July, August—the pageant of summer! Almost too much of a good thing! Blossom flowed along the borders in great waves, and was gone. If only the thing would stop for half a minute and let you look at it. But no, it came and went; came and went; until there was nothing left but the Michaelmas daisies.

—REGINALD ARKELL, *Old Herbaceous*

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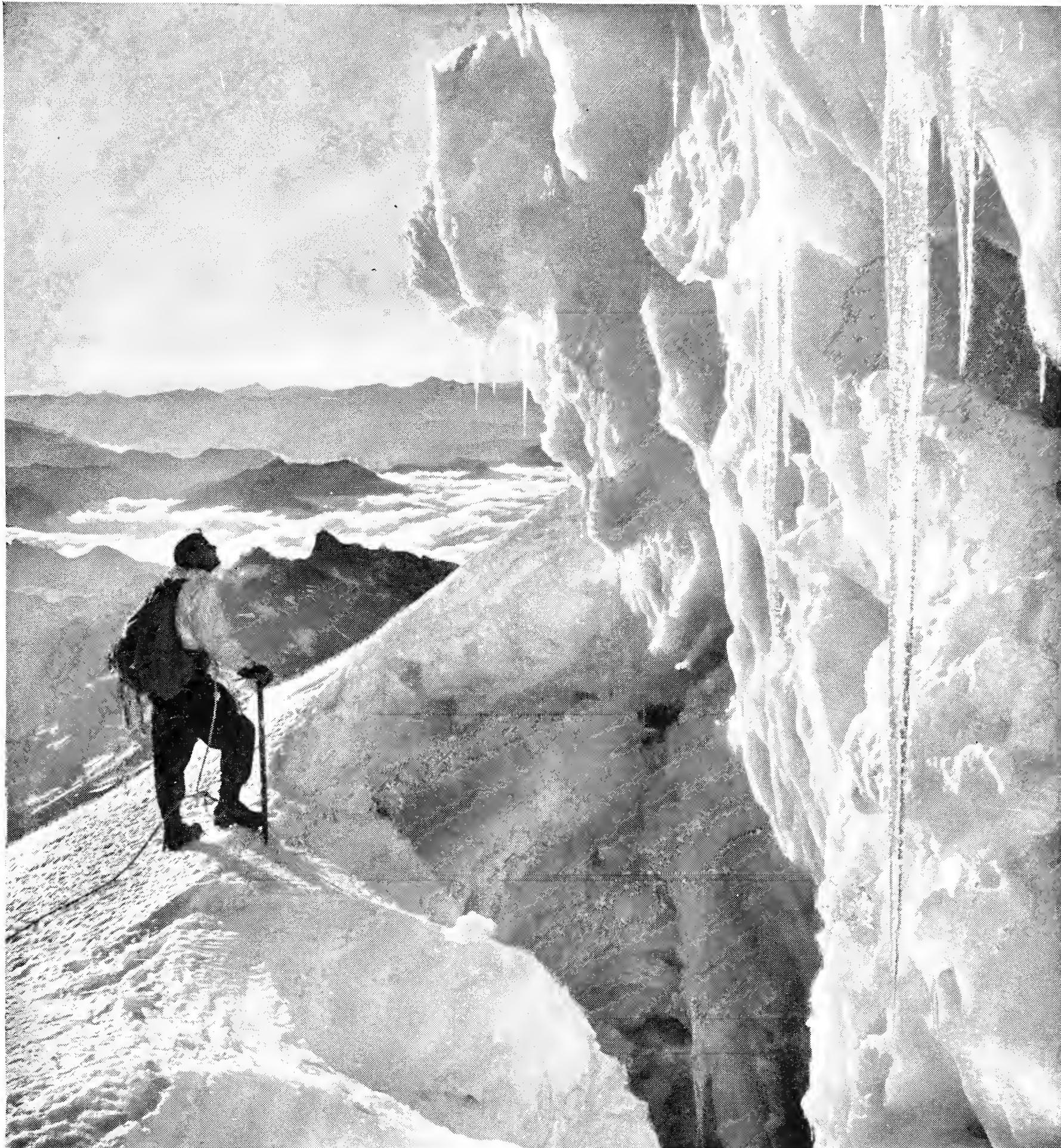
“... and he cried with a loud voice saying,
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